



Harvest Training and Consultancy Uganda Ltd.

trainers & bookkeepers

COST & MGT ACCOUNTING - PAPER 7

UNIT 1 - INTRODUCTION TO MANAGEMENT ACCOUNTING



1.0

INTRODUCTION TO COST & MANAGEMENT ACCOUNTING

LEARNING OUTCOMES;

- Distinguish between data and information.
 - Identify and explain the features of good information.
 - Outline the managerial processes of planning, decision making and control.
 - Explain the difference between strategic, tactical and operational planning.
 - The need of external and internal users of accounting information.
 - Comparison between financial, cost accounting, management accounting and financial management.
 - Explain the roles of a management accounting and financial manager.
 - Explain the nature and role of management accounting and financial management.
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THE NATURE AND PURPOSE OF MANAGEMENT ACCOUNTING

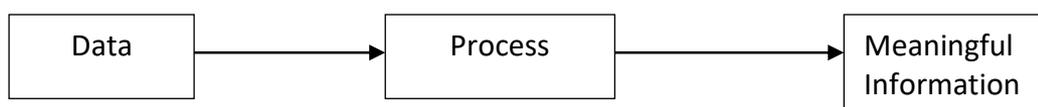
Data and Information

Data is unprocessed information or facts.

Information is data which is processed in such a way that it is meaningful to the person who receives it.

The terms data and information are often used interchangeably in everyday language, though it is vital to understand the distinction between them.

As data is converted into information, some parts of it are eliminated and replaced by summaries which are easier to understand.



Features of Good Information

Information is provided to management to assist them with planning, controlling operations and making decisions. Management decisions are likely to be better when they are provided with better quality information.

The attributes of good information can be identified by the "ACCURATE" acronym

A - Accurate

C - Complete

C - Cost effectiveness (costs should not weigh the benefit).

U - Understandable

R - Relevant

A - Accessible

T - Timely

E - Easy to use

Accurate - Information should be accurate as it needs to be for its purpose. However, the degree of accuracy depends on the reasons why the information is required.

Complete - Information provided should be complete for its purpose in order for managers to take accurate decisions, they need information that gives them a full picture of their area of control.

Cost effective - The costs of providing information should not outweigh the benefits to be driven from it.

Understandable - Information provided should be easy for the end users to understand. If a manager is unable to understand then, he may make bad decision or may not make a decision at all.

Relevant - Information should be relevant for its purpose. There is no point in providing a manager with information if the manager does not know what to do with it.

Accessible - Information should be accessible via the appropriate channels of communication into the right person. A channel of communication refers to the method by which the information is given such as verbally, in a formal report, in an informal report, by email, etc.

Timely - It should be timely for its purposes. This means that it should be provided to a manager in time for the manager to do something with it. Information that is provided late is as good as useless. It can only be used for comparison purposes.

Easy to use - It should **be easy to use**

Other features of good information include;

Confidence - Information must be trusted by the manager who expects to use it.

Volume - the volume of information provided should be manageable. Too much volume of information normally scares users who read it.

Managerial process of planning, Decision Making and Control

The main functions for the information provided to management include:-

1. Planning



2. Decision making
3. Control

Planning

- Planning involves establishing the objectives/goals of an organization and formulating relevant strategies that can be used to attain the desired objectives.
- Planning can either be short term (Technical planning) or long term (strategic planning)

Decision Making

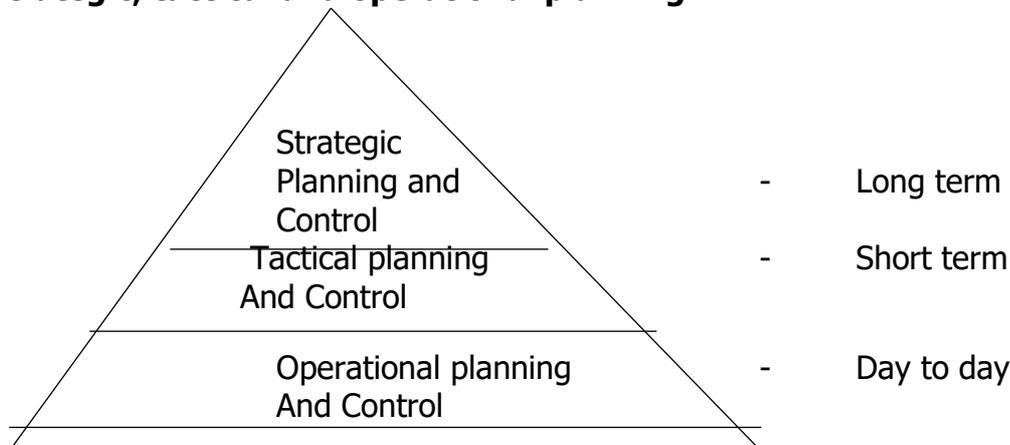
It involves considering information that has been provided in order to make an informed decision. In most cases decision making involves the best option amongst the available alternatives.

Control

This is the second part of decision making process. Information relating to the actual results of an organization is reported to managers. Managers use the information relating to actual results to take corrective measures and reassess and amend the original budgets or plans.

Internally sourced information, produced largely for control purposes is referred to as feedback.

Strategic, tactical and operational planning



A single hierarchy of management levels can be presented as in the above diagram. There are three different levels of planning usually referred to as planning horizons. These levels differ according to their time span and seniority of the manager responsible for the tasks involved.

Strategic planning - Top managers formulate long term objectives/goals and plan (strategies) for an organization, on changes in these objective, on resources used to attain these objectives and the policies that govern the acquisition, use and disposition of these resources.

Tactical planning - Senior managers make short term plans in order to achieve long term objectives.

Operational planning - All managers are involved in making day to day decisions about what to do next and how to deal with problems as they arise.

Management Accounting and Management Information

Essentially, accounting information system provides accounting information to different users at different management levels for diverse economic activities. Though there are various accounting disciplines, the ones that are covered in this session include:

1. Financial Accounting System,
2. Cost accounting system and
3. Management accounting system.

Financial Accounting system

Financial accounting is a branch of accounting concerned with providing information about the results of the business performance and its economic position. It is the process of recording and classifying transactions in the books, processing and analysis of financial data in a fairly subjective manner that convey financial information to the interested users. It involves recording, classification, and analysis of business transactions in a fairly subjective manner according to the nature of expenditure so as to facilitate the preparation of income statement, statement of financial position (balance sheet), statement of cash flows among others. This accounting system measures the organization's level of stability and its going concern. Users of financial information may include but not limited to shareholders (existing and potential), creditors, financial analysts, government agencies, labour unions, management, employees, customers and the general public.

Cost Accounting system

Costing accounting is a tool of management that provides a detailed record of the costs relating to products, services, operations or activities. It refers to process of determining and accumulating the costs of some particular product or service. It is the cost accumulation system concerned with the calculation cost for the purpose of stock valuation and profit measurement.

Other than the establishment of costs, cost accounting emphasizes the controlling of costs so as to have high value or quality product at minimum unit cost. The accounting system provides management with a means by which costs are accumulated from input of materials through the production process until completion and, ultimately, to cost of goods sold.

On the other hand, cost accounting is limited predominantly used within the company to aid management in the process of making choices that will benefit the stockholders by maximizing company profits which translate into stockholder wealth.

Since information is used internally, the information may be presented on any logical basis just so long as it will aid the manager to reach an appropriate informed decision. One of the many

benefits of cost accounting is that it turns data into cost information, knowledge and wisdom about a business entity's operations that is useful for;

- Stock valuation and profit measurement,
- Measuring performance,
- Cost control or managing costs,
- Assessing the profitability or viability of the product or service,
- Budget formulation,
- Determining the fees or prices for goods and services and
- Deciding to authorize, modify or discontinue a program or activity.

Management accounting system

Management accounting is defined as the application of accounting techniques for providing information designed to help all levels of management in planning and controlling the activities of a business enterprise and in decision making. According to Institute of Management

Accountants, management accounting is considered as an essential part of management concerned with identifying, presenting and interpreting information used for formulation of strategy, planning and controlling activities of organization, decision making, optimizing the use of resources and safeguarding company's assets.

In essence, the system is concerned with the provisions and use of accounting information to managers within organizations, to provide them with the basis to make informed business decisions that will allow them to be better equipped in their management and control functions.

Differences between Management and Cost Accounting

Management accounting has cost accounting as its essential foundation. The accounting systems are closely linked as they use common basic data and reports to a significant degree. Much of the information used to prepare accounting statements and reports in cost accounting is also used in management accounting reports. For example management accounting utilizes the same data to prepare budgets, performance reports, control reports, data analyses for decision making, planning and control purposes. Like cost accounting, management accounting involves reporting at frequent intervals rather than at the end of the year.

Despite these similarities, the following points of difference between the two should be noted:

1. Cost accounting is mainly concerned about establishing the historical cost of the product or service.
2. Management accounting is concerned with the historical information but it is also forward looking. It is concerned with both historical and future costs of production/services.
3. Management accounting provides both qualitative and quantitative financial information to managers whereas costing accounting provides only quantitative financial information.



4. Management accounting is essentially concerned with offering advice to management based upon information collected.
5. Management accounting uses financial accounting techniques such as ratio analysis and funds flow analysis. The truth is that management accounting is cost accounting plus financial accounting. But cost accounting does not use financial accounts as such though it supplies data to financial accounting.
6. Management accounting may include involvement in planning, decision making and control whereas costing accounting is on cost control - keeping costs within the budgeted and standard limits.

Differences between Management/cost Accounting and Financial Accounting

The differences between management accounting and financial accounting are also the points of difference between cost accounting and financial accounting. However, to get a clear perspective, some important differences are covered below:

Primary users of information - The users of financial accounting statements are mainly external to the business enterprise such as shareholders, creditors, financial institutions etc. The information generated under management accounting system is used by members of management at different levels.

Emphasis on the future - Since planning is such an important part of the manager's job, management accounting has a strong future orientation. In contrast, financial accounting primarily provides summaries of past financial transactions. These summaries may be useful for planning, but only to a point. Financial accounting reports on past events or occurrences whereas Management accounting focuses on the future by providing predetermined information that can enhance management function.

Management accounting is not mandatory - Financial accounting is mandatory; i.e. it must be done. Various outside parties such as Securities and Exchange Commission (SEC) and the tax authorities require periodic financial statements. Management accounting, on the other hand is not mandatory. A company is completely free to do as much or as little as it wishes.

Unit of measurement - Financial accounting addresses financial performance measures (i.e. matters that can be expressed in monetary terms) and therefore supports money measurement concept. Management accounting addresses financial and non-financial performance measures (i.e. issues that cannot be quantified) because planning and decision making cannot be done by using quantitative information only.

Reporting frequency - Financial accounts are usually prepared annually or semi-annually while management reports are routinely prepared.



Audit requirement - Financial accounts must be subjected to external audit since they are used by external parties but it is not a requirement to audit cost and management accounts.

Accounting system - Financial accounts follows the double-entry system for recording, classifying and summarizing business transactions. Management accounting is not based on double-entry system.

Level of detail - Financial accounting is highly summarized but costs and management accounting is highly detailed.

A company may have important **non-financial objectives** which will limit the achievement of financial objectives. Examples of non-financial objectives are as follows:

The welfare of employees - A company might try to provide good wages and salaries, comfortable and safe working conditions, career development and pensions to employees in order to motivate them.

The welfare of management - Managers may often take decisions to improve their own situations even though their decisions may increase expenditures and reduce profits. High salaries, company cars and other perks are all examples managers promoting their own interests.

The welfare of society as whole - Companies should be aware of their role to the wellbeing of society e.g. if a company deals in toxic matters, it is its responsibility to ensure that the environment is protected. Also if a company makes excess profits, it can give back some of its profits to the society say by improving on infrastructure.

The provision of services - For some organizations, their objective is to provide services to the public e.g. electricity, water, sewerage etc.

The fulfillment of responsibility towards customers - Responsibilities towards customers include providing a product or service of quality that customers expect and dealing with them honestly and fairly.

Survival - Some firms only struggle for long term survival i.e. future continuity so they will continue to operate as long as they can break even.

Other non-financial objectives are growth, diversification and leadership in research and development.

Management accounting provides information which is used internally. The financial accounting function provides information which is used externally. The management accountant is not concerned with the calculation of earnings per share for the income statement and the financial accountant is not concerned with the analysis of variances between actual results and budgets. Management information provides a common source from which both financial accounts and management accounts are prepared.

Question 6 December 2008

(a) Various groups of stakeholders in a firm may have divergent interests.

Identify the various stakeholders of a firm and briefly explain the interests of each.

(8 marks)

(b) Discuss any **five** non-financial objectives that might affect a firm's financial objectives.

(5 marks)

(c) Differences between financial accounting and management accounting arise in a manner in which the common source of data is analysed. Discuss.

(7 marks)

(Total 20 marks)





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UNIT 2 - Cost Classification



2.0

COST CLASSIFICATION & CONCEPTS

LEARNING OUTCOMES

- Definition of Cost
- The need for classifying costs and revenues
- Cost objectives
- Methods of Cost Classification
- The High-low Method
- Costs for performance evaluation
- Costs for income determination and inventory valuation

1.1 CLASSIFICATION BY TOTAL PRODUCT/SERVICE COST

A Cost is sacrifice/expenditure made for goods or services. May take the form of an outlay cost or an opportunity cost. In the most general sense cost means sacrifice or forgoing.

The **total cost** of making a product or providing a service consists of:

- (a) Cost of materials
- (b) Cost of wages and salaries
- (c) Cost of other expenses e.g. rent and rates, electricity and gas bills, depreciation etc.

Each component of total cost i.e. materials; labour and other expenses can be further divided into:

- (a) **Direct costs or**
- (b) **Indirect costs**

1.2 DIRECT COSTS

A **direct cost** is a cost that can be traced in full to the product, service or department that is being costed.

- **Direct materials** are all materials that are physically observable as being identified with the finished good and that may be traced to the finished good in an economically feasible manner. E.g. sheet steels and sub-assemblies for an automobile company. Direct materials do not often include minor items such as glue or nails because the cost of tracing insignificant items do not seem worth the possible benefits of having more accurate product costs. Such costs are considered supplies or indirect materials.
- **Direct Labour Costs** – are specific costs of the workforce used to make a product or provide a service. Direct labour costs are established by measuring of the time taken for a job, or the time taken in direct production work.
- **Direct Labour** – is all labour that is physically traceable to the finished goods in an economically feasible manner. E.g. the labour of machine operators and assemblers. Much labour, such as that of material handlers, janitors, and plant guards or supervisors is considered indirect labour because of the impossibility of economic feasibility of tracing such activity to specific products via physical observation.



- **Direct Expenses** – are those expenses that have been incurred in full as a direct consequence of making a product, providing a service or running a department. Therefore, direct expenses are any expenses, which are incurred on a specific product other than direct material costs and direct wages. E.g. the hire of tools of equipment for a particular job, maintenance costs of tools, fixtures etc.

1.3 **INDIRECT COSTS**

An **indirect cost** or overhead is a cost that is incurred in the course of making a product, providing a service or running a department but which cannot be traced directly and in full to the product, service or department. E.g., Supervisors' wages, cleaning materials, building insurance etc.

Indirect costs are further classified into four (4) major classes; i.e.

- (a) **Production overheads**
- (b) **Administration overheads**
- (c) **Selling Overheads**
- (d) **Distribution overheads**

(a) **Production Overheads/Indirect Manufacturing Costs**

Production (or factory) overhead includes all indirect material costs, indirect wages, and indirect expenses incurred in the factory from receipt of order until its completion. i.e. all costs other than direct materials and direct labour that are associated with the manufacturing process. Other terms describing this category include **factory overhead, factory burden, manufacturing overhead and manufacturing expenses**.

The sub classifications of factory overheads are:

- (a) **Variable factory overhead** e.g. power, supplies and most indirect labour.
- (b) **Fixed factory overhead** e.g. rent, insurance, property taxes, depreciation and supervisory salaries.

(b) **Administrative Overheads**

Administrative overhead is all indirect material costs, wages and expenses incurred in the direction, control and administration of an undertaking e.g.

- Depreciation of office administration overhead, buildings and machinery.
- Office salaries, including salaries of directors, secretaries and accountants.
- Rent, rates, insurance, lighting, clearing, telephone charges etc.

(c) **Selling Overhead**

Selling overhead is all indirect materials costs, wages and expenses incurred in promoting sales and retaining customers e.g.

- Printing and stationary, such as catalogues and price lists
- Salaries and commissions of salesmen
- Advertising and sales promotion, market research
- Rent, rates and insurance of sales office and showrooms, bad debts etc.

(d) **Distribution Overhead**

Distribution overhead is all indirect material costs, wages and expenses incurred in making the packed product ready for despatch and delivering it to the customer e.g.



- Cost of packing cases
- Wages of packers, drivers and dispatch clerks
- Insurance charges, rent, rates, depreciation of warehouses etc.

Summary of Costs/Total Expenditure

Materials	=	Direct Materials	+	Indirect Materials
+		+		+
Labour	=	Direct Labour	+	Indirect Labour
+		+		+
Expenses	=	Direct Expenses	+	Indirect Expenses
Total Cost		Direct/Prime Cost		Overheads

NOTE:

The total of direct costs is called **prime cost**.

1.4 FUNCTIONAL COSTS (CLASSIFICATION BY FUNCTION)

In a traditional costing system for a manufacturing organisation costs are classified as follows:

- (a) **Production or Manufacturing Costs** are costs associated with the factory. They are costs, which are incurred by the sequence of operations beginning with the supply of raw materials and ending with the completion of product ready for warehousing as a finished good item.
- (b) **Administrative Costs** are costs associated with general administrative office departments. They are costs of managing an organisation, that is planning and controlling its operation, but only in so far as such administration costs are not related to the production, sales, distribution or research and development functions.
- (c) **Marketing or Selling and Distribution Costs** are costs associated with sales, marketing, warehousing and transport departments.
- (d) **Research Costs** - are the costs of searching for new or improved products, whereas development costs are the costs incurred between the decision to produce a new or improved product and commencement of full manufacture of the product.
- (e) **Financing Costs** are costs incurred to finance the business such as loan interest.



1.4.1 FUNCTIONAL COST BUILD-UP

	Ugx
Direct material costs	X
Direct labour costs	X
Direct expenses	X
Prime costs	XX
Variable production overheads	X
Marginal production costs	XX
Fixed production overheads	X
Total factory production costs	XX
Non-production overheads; Administration overheads	X
Selling and distribution	X
Full cost of sales	XX
Required profit margin	X
Selling Price	XX

Non production costs: These are costs that are associated with the production process in manufacturing organization e.g.

- **Administration costs:** Costs of running the general administration department of an organization e.g. telephone etc.
- **Selling costs:** Costs associated with taking orders from customers who wish to buy an organization's products or services.
- **Marketing costs:** Advertising, transport, printing materials
- **Distribution costs:** Costs involving in distributing an organization's products such as cost of running a warehouse to delivery costs.
- **Finance costs:** Costs incurred in order to finance an organization e.g. loan interest.

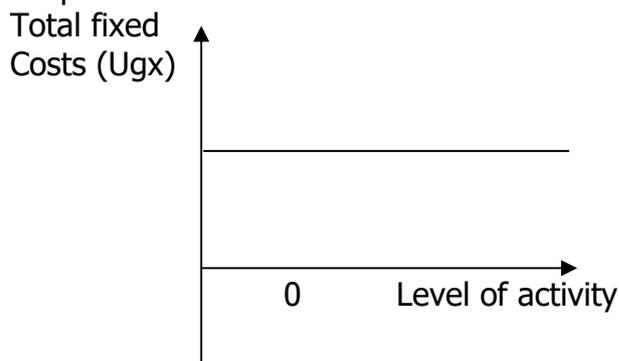
1.5 FIXED AND VARIABLE COSTS

1.5.1 **Fixed Costs**

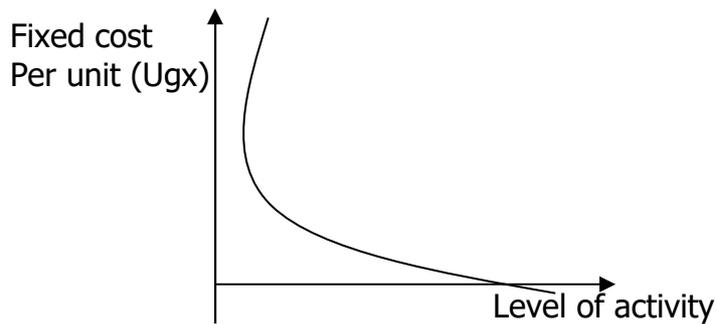
A fixed cost is a cost which is incurred for a particular period of time and which within a certain activity levels is unaffected by changes in the level of activity.

A fixed cost is fixed only in relationship to a given period of time and a given, though wide, range of activity, called the '**relevant range**'. The relevant range may be defined as the band of activity in which budgeted sales and expense relationships will be valid. Examples of fixed costs include rent of factory, property rates, depreciation of plant and salaries of administration staff.

Graph of total fixed cost

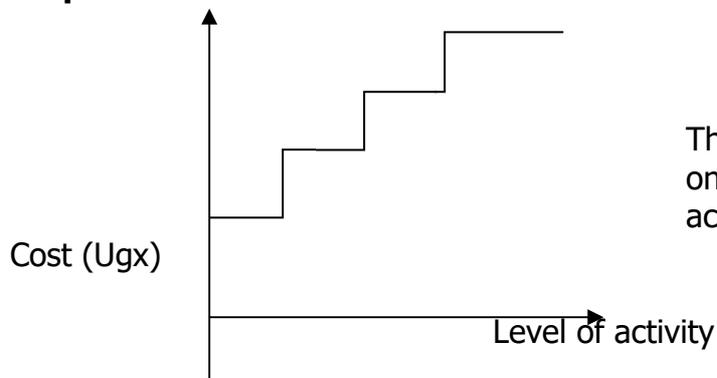


Graph of fixed cost per unit



Note: The total cost remains constant over a given level of activity but the cost per unit falls as the level of activity increases.

Step fixed costs



This is a type of fixed cost which is only fixed within certain levels of activity.

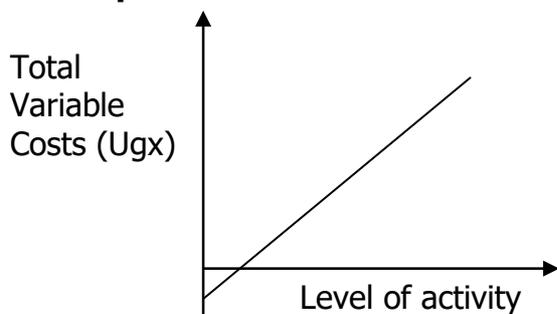
1.5.2 Variable Costs

A **variable cost** is a cost which tends to vary with the level of activity i.e. the cost changes in total in direct proportion to changes in activity examples of variable costs include:

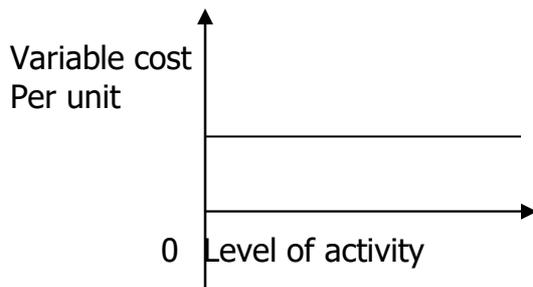
- Direct material costs
- Direct Labour costs
- Sales commission

As the activity levels increase, total variable costs increase as well.

1. Graph for Total variable costs



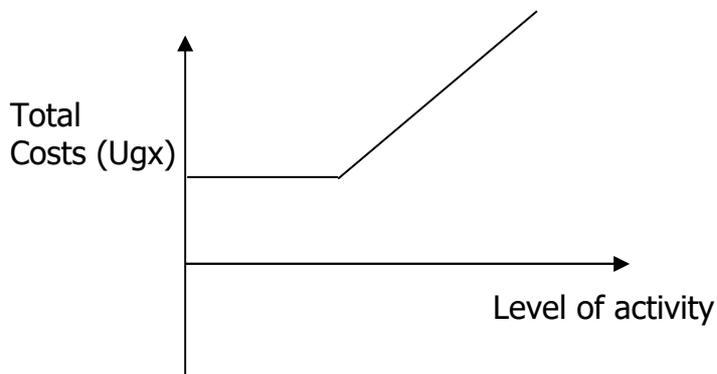
2. Graph for variable cost per unit



Note: As total costs increase with the activity levels, cost per unit of variable costs remains constant.

1.5.3 Semi-variable costs

These are costs which contain both fixed and variable cost components and are therefore partly affected by fluctuations in the level of activity. Examples include electricity bills, phone bill



The fixed part of semi-variable costs represents minimum fees for making a particular item or service available.

1.6 PRODUCT COST AND PERIOD COSTS

- **Product costs** are costs identified with the finished product such costs are initially identified as part of the value of stock. They become expenses (in the form of cost of goods sold) only when the stock is sold.
- **Period costs** are costs that are deducted as expenses during the current period without ever being included in the value of stock held.
- **Analysis of semi variable cost into fixed and variable elements**

A number of methods exist for analysing semi-variable costs into their fixed and variable elements. The two main methods are:

- (a) **High - Low method**
- (b) **Method of least squares (Regression method)**

High - Low method

Step 1:

Select the highest and lowest activity levels and their associated costs

Step 2:

Calculate variable cost per unit (V/c) i.e.

$$V/c = \frac{\text{Total cost at high activity level} - \text{Total cost at low activity level}}{\text{Total units at High activity level} - \text{Total units at Low activity level}}$$

Step 3

Calculate fixed costs by substitution into the total costs equation either using high or low activity level

Fixed costs = Total costs – Total Variable costs

ACTIVITY 1

Analysis of costs into fixed and variable elements

Output (units)	Total costs (Ugx)
200	700,000
300	800,000
400	900,000

Required:

- (a) Find the variable cost per unit.
- (b) Find the fixed cost per unit
- (c) Establish the total cost if output is 350 units.
- (d) Estimate the total cost if output is 600 units.

ACTIVITY 1

- (a) Maxima works with Twins Manufacturing Company in Nakawa Industrial Area. During the monthly meeting, he heard the Cost & management accountant mention the terms below.
 - (i) Direct and Indirect Costs
 - (ii) Fixed & variable costs
 - (iii) Cost unit and cost structure

As a student of Cost & management accounting, Maxima approaches you for help, with clear examples distinguish between each of the pairs of terms mentioned above

- (b) ABC Company Ltd has been in operation for the six (6) month from July 2015 to December 2015 and has provided you with the following information.

Month	Units produced (in Kgs)	Total costs (in Ugx)
July	4,500	6,000,000
August	6,000	7,773,000
September	8,500	10,728,000
October	12,000	14,865,000
November	16,500	20,184,000
December	21,000	25,500,000

Required;

Using the high – low range method, determine;

- (i) **The unit variable cost**
- (ii) **The total fixed cost**
- (iii) **The total variable cost per month**

1.7 CONTROLLABLE AND NON-CONTROLLABLE COSTS

Controllable costs: These are costs which can be controlled by an individual manager e.g. Salary increase.

Non-controllable costs: These are costs which are not influenced by a particular manager's decision e.g. earth quakes, Flooding etc.

1.8 OTHER COST CLASSIFICATIONS

- (a) **Avoidable costs** are specific costs of an activity or business, which would be avoided if the activity or business did not exist.
- (b) **Unavoidable costs** are costs, which would be incurred whether or not an activity or sector existed.
- (c) **A controllable cost** is a cost, which can be influenced by management decisions and actions.
- (d) **An uncontrollable cost** is any cost that cannot be affected by management within a given time span.
- (e) **Discretionary costs** are costs, which are likely to arise from decisions made during the budgetary process. They are likely to be fixed amounts of money over fixed periods of time e.g.
 - Advertising
 - Research and development
 - Training

1.9 COST CONCEPTS

A cost centre is the smallest segment of activity or area of responsibility for which costs are accumulated. Therefore, a cost centre acts as a collection place for certain costs before they are analysed further. Cost centres include:

- A department
- A machine or group of machines
- A project

Cost centres are essential building blocks of a costing system. They are a starting point for:

- (a) The classification of actual costs incurred
- (b) The preparation of budgets of planned costs
- (c) The comparison of actual costs and budgeted costs



A cost unit is a unit of product or service to which costs can be related. The cost unit is the basic control unit for costing purposes e.g.

- Barrel (in the brewing industry)
- Room (in a hotel)

A cost object or objective is any activity for which a separate measurement of cost is desired e.g.

- The cost of a product
- The cost of a service
- The cost of operating a department

A profit centre is similar to a cost centre but is accountable for costs and revenues.

A revenue centre is similar to a cost centre and profit centre but is accountable for revenues.

An **investment centre** is a profit centre with additional responsibilities for capital investment and possibly for financing and whose performance is measured by its return on investment.

Cost centres, revenue centres, profit centres and investment centres are also known as **responsibility centres**.

A **responsibility centre** is part or segment of an organisation that is accountable for a specified set of activities. Also called **accountability centre**.

A responsibility centre is a department or organisational function whose performance is the direct responsibility of a specific manager.

1.10 Other Cost Concepts/ Terms

- **Sunk cost** - Represents a cost that has already been incurred which is therefore, irrecoverable. Examples of sunk costs are the book values of existing assets, such as plant & machinery, investment in securities among others. Sunk costs should not normally be taken into account when determining whether to continue a project or abandon it, because they cannot be recovered either way.
- **Standard Costs** - The word standard means a benchmark or yard stick. The standard cost is a predetermined cost which reflects in advance what each product or service should cost under given circumstances. In short, Standard cost is the amount the firm thinks a product or the operation of the process for a period of time should cost based upon certain assumed conditions of efficiency, economic conditions and other factors.
- **Imputed cost or Notional cost** - Expenditures that are attributable to the use of one's own factor of production, such as the use of one's own capital or assets, are imputed costs. Such costs are not actually incurred in some transaction and do not enter into traditional accounting system. Interest on internally generated funds, rental value of company-owned property and salaries of owner's business are examples of imputed/ notional costs.
- **Differential cost** - Differential cost is the disparity between the cost of two alternative decisions, or of a change in output levels. Similarly, differential cost is the aggregate of change in fixed cost and or variable which takes place due to the adoption of alternative course of action or change in the volume of output. For example, if work done by a machine costs £25,500 but similar work cost £20,000 if labour is used, then the differential cost is £5,500.

- **Relevant costs** - Relevant costs are those future costs which differ between alternatives. Such costs are affected and changed by a decision. On the contrary, irrelevant costs are those which remain the same and do not affected by the decision whatever alternative is chosen.
- **Opportunity cost** - This represents the value of the benefit sacrificed when one course of action is chosen, in preference to another alternative. The opportunity cost is represented by the foregone potential benefit from the best rejected course of action. It is normally regarded a relevant cost when it comes to decision making.

1.11 Summary of Classifications of Costs

- 1. Time when computed**
 - a) Historical costs
 - b) Budgeted or predetermined costs (via cost prediction)
- 2. Behaviour in relation to fluctuations in activity (variability)**
 - a) Variable costs
 - b) Fixed costs
 - c) Semi-variable/semi-fixed costs/mixed cost
- 3. Degree of averaging**
 - a) Total costs
 - b) Average cost per unit (e.g. per student, per hour, per pound)
- 4. Management Function**
 - a) Manufacturing/production costs
 - b) Selling and distribution costs
 - c) Administrative costs
 - d) Research and developments costs
- 5. Ease of tractability to cost objective**
 - a) Direct Costs
 - b) Indirect costs
- 6. Timing of charges against revenue**
 - a) Product costs
 - b) Period costs
- 7. On the basis of controllability**
 - a) Controllable cost
 - b) Uncontrollable cost

QUESTION: COST CLASSIFICATION

Name five different ways in which costs may be classified and briefly explain the purpose of each classification

ANSWER

(i) **Following are the different ways in which costs may be classified.**

- **On the basis of their variability**
Fixed cost
Variable cost
- **On the basis of functions**
Manufacturing cost
Selling and distribution cost
Administration cost
- **On the basis of controllability**
Controllable cost
Uncontrollable cost
- **On the basis of time**
Historical cost
Pre-determined cost
- **On the basis of identification to product**
Direct cost
Indirect cost

(ii) **Purpose of each classification**

- (1) **On the basis of variability.** Classification of costs on the basis of variability is done for control purposes. This is generally contended that variable cost is controllable, whereas fixed costs as a matter of policy is not controllable, therefore cost if classified into fixed and variable can be easily controlled.
- (2) **On the basis of functions.** According to function cost is classified for the purpose of calculation of all functional costs involved in the production and sale of goods. On the basis of function manufacturing costs can be separately and accurately calculated. Similarly administrative cost of such goods produced and cost on selling of goods is correctly ascertained by this classification.
- (3) **On the basis of controllability.** Sine certain costs can be influenced by the action of a specified member of an undertaking and certain costs which are unavoidable are not influenced by action of any member of the organisation, this requires classification on the basis of controllability for cost control purposes e.g. direct costs are controllable by management in the factory and normal production waste is uncontrollable cost.
- (4) **On the basis of time.** The classification on the basis of time is usually done for control and prediction for the future such as budgeted costs and standard costs, in which cost incurred in the past becomes precedent for the future.
- (5) **On the basis of identification to product.** The classification of cost on the basis of identification to product is done in order to ascertain correct cost of the product. Costs which can be identified to the product are charged directly to the product and costs which cannot be easily identified is apportioned on some suitable basis.



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COST & MGT ACCOUNTING - PAPER 7

UNIT 3 - Material Costs



3.0

MATERIAL COSTS

UNIT 3 OVERVIEW:

- Inventory control
 - Ordering, receipt and issue of raw-materials
 - The storage of raw-materials.
 - Inventory control levels
 - Just-in-time Concept
 - Stock valuation
 - Exam type questions
-

1.1 INVENTORY CONTROL

Stock control – Stocks in any organization can be generally be classified under four main headings;

- (a) Raw materials
- (b) Work in progress
- (c) Spare parts consumables
- (d) Finished goods

Control of the materials should cover the following areas;

- (i) Ordering of stock
- (ii) Purchase of stock
- (iii) The receipt of goods into stores
- (iv) Storage
- (v) The issue of stock and maintenance of stock at the most appropriate levels.

1.2 THE ORDERING, RECEIPT AND ISSUE OF RAW-MATERIALS

Proper records must be kept of the physical procedures for ordering and receiving and receive a consignment of materials to ensure the following;

- ✓ That enough stock is stored/held
- ✓ That there is no distinction of ordering
- ✓ Quality is maintained
- ✓ That there is adequate record keeping for accounts

1.2.1 A typical series of procedures might be as follows;

- (a) **Rising of purchase requisition.** The user department issues a purchase requisition note, which is sent to the purchasing department authorizing the department to order for further stock.
 - The purchase requisition will show a number of the stock item required, description, code number and quantity.
 - The data required and any special requirements.
 - The job number or department to be charged with the goods
 - The authorized signature

- (b) **Search for the suppliers** - On receiving the purchase requisition, the purchase department starts exploring the sources of materials and supplies. The search for the suppliers can be done through the use of the firm's records, newspapers, price lists, tender, advertisements and inquiry letters among others.
- (c) **Request for quotations** - This involves inquiries and requests for quotations sent to potential supplies fully specifying requirements such as quality, quantity and price. The request for quotation could also take a form of advertisement.
- (d) **Receipt for quotation and supplier selection** - The quotation represents documents from supplier showing their offer in terms of quantity, quality and price. The supplier is selected if the quotation is the quotation is of the right description required by the firm as spelt out in tender documents.
- (e) **The purchase order** - The purchasing department draws a purchasing order, which is then sent to the supplier. Copies of the purchase order must be sent to the accounts department and the store keeper.
- (f) **Receiving and inspection of materials** - The materials –the materials are always received from the supplier accompanied by the delivery note. The received materials are inspected and tested to confirm whether the physical units supplied conformed to the specifications of the purchase order.
- (g) **Receipt and payment of bills** - Preparation and payment of bills is the last step of purchase routine. As soon as the supplier's invoice is received, its authenticity and accuracy is checked with reverence to the purchase order and materials received not by accounting and stores department.

1.2.2 Issue of Materials

Materials can only be issued against the materials or the stores requisition. This document must record quantity of goods issued, cost centre, job number for which the requisition is being made.

Materials, transfers and returns

Where materials have been issued to one job or centre and are later transferred to a different centre, the materials transfer note is issued. Materials returned must also be recorded on the materials return note (MRN)

Store Keeping Function

This is another important step in material control system after the purchasing procedure. The store keeping function in an industry involves both keeping the store of materials and maintaining the record of stores. Store keeping involves the following activities:

- Issue requisitions for the purchase of materials,
- Receipt of purchased materials from the receiving department,
- Storing of materials in proper places so as to identify and locate items without delay,
- Issuing of materials to production and service departments and ensure that material issues are properly authorized and accounted for,
- Regular taking off physical stock count and stock control,
- Classification and identification of materials by their nature, size and value,
- Protection of materials against fire, theft, damage and other threats and
- Maintain proper record of inventory.

Good store keeping function involves storing materials in order to achieve the following objectives:

- Speedy receipt and issue of materials,
- Immediate location of required materials,
- Full identification of materials all the time,
- Protection of materials from damp, evaporation, among others,
- Economical use of storage space and
- Avoiding over-stocking and under-stocking

1.3 THE STORAGE OF RAW-MATERIALS

1.3.1 Organization of stores: Centralized Vs Decentralized storage

The type of organization suited for any stores department depends upon the nature of the business organizations, size and layout of the factory, nature of materials required to be stored and frequency of purchase and issue of materials. Stores systems that may be used include:

Centralized storage - is where the storage of materials is confined to one central store in an organization and,

Decentralized storage - which refers to a system of stores where materials are kept at different stores (sub-stores) in the organization.

Advantages of centralized storage include the following:

- Closer control is possible on a central store,
- Economy in clerical cost, stationery expenses and record keeping,
- Specialized functions with better supervision and better control over stock,
- Small number of store keeping staff is probably required as opposed to numerous departmental stores,
- Better supervision and control is achieved and,
- Material items will be required at a cheaper purchase prices because of bulk purchase discounts that may attract trade discounts.

Disadvantages of centralized storage include the following:

- High costs of transporting heavy and bulky stock to the departments,
- Delays and inconveniences of obtaining supplies by the user departments because requisitions passes through many hands at the head office,
- It is risky to keep all materials in one central store in case of losses by fire, floods, and theft among others,
- Leads to internal transportation costs and
- May cause congestion at the main store.

Advantages of decentralized storage include the following;

- It is less risky because material will be kept in different storage. In case of any calamity, some stores will be affected,
- Delays and inconveniences in getting supplies from the store will be minimized,
- It is associated with no internal costs of transporting supplies within the system and,
- Controlling and storing functions can be accomplished easily.

Disadvantages of Decentralized Stores

- Higher cost of supervision and monitoring,
- More space is required for individual departments,
- Higher amount of investment is required in storage facilities,
- More time for stock taking and stock monitoring,



- Higher cost of staff and stationery and,
- Improved technique is less possible for controlling of materials.

1.3.2 Recording of Stock Levels

One of the objectives of store keeping is to maintain accurate records of stock levels and this involve the accurate recording of stock movement i.e. issues and receipts.

System for recording stock movements

The most commonly encountered systems for recording stock movements include the following;

- Bin cards
- Stores ledger

A bin card - Shows the level of stock of an item at a particular stores location in terms of quantify. It is kept with the actual stock and is updated by the storekeeper as stocks are issued and received.

Stores ledger A/c

Stores ledger A/c is similar to the bin card except it shows both the store quantities and value of stocks held at any point in time.

Stock taking

Stock taking involves counting the physical stock on hand at a certain date, and then checking this against the balance shown in the stock records. There two main types of stock taking i.e. **periodical stock taking** and **continuous stock taking**.

Periodical stock taking is the process whereby all stock items are physically counted and valued at a set point in time, usually at the end of an accounting period.

Continuous stock taking is the process of counting and valuing selected items at different times on a rotating basis. This involves a specialist team counting and checking a number of stock items each day, so that each item is at least checked once a year. Under this method valuable items or items with high turnover could be checked more frequently.

Advantages of continuous stock taking over periodic stock taking

- The annual stock taking is unnecessary and the disruption it causes is avoided.
- Regular skilled stock takers can be employed, reducing likely errors.
- More time is available, reducing errors and following investigations.

1.4 INVENTORY CONTROL LEVELS

1.4.1 Why hold stock?

The costs of purchasing stock are usually one of the largest costs faced by an organization and once obtained, stock has to be carefully controlled and checked. The main reasons holding stock can be summarized as follows:

- To ensure sufficient goods are available to meet un expected demand
- To provide a buffer between processes
- To meet any future shortage(s)
- Too take advantage of bulk purchasing discounts
- To absorb seasonal fluctuations and any variations in usage and demand
- To allow production to flow smoothly and efficiently
- As a necessary part of the production process
- As a deliberate investment policy, especially in times of inflation or possible shortages.

1.4.2 Holding costs

These are costs associated with having high stock levels. The reasons they occur are as follows;

- Costs of storage and stores operations
- Interest charges. Holding stock involves the tying up of capital on which interest must be paid or interest foregone if money was to be invested somewhere else.
- The risk of obsolescence (becoming out of date/passing out of use)
- Deterioration (becoming worse)
- Theft

1.4.3 Cost of obtaining stock

The high ordering or procurement costs are associated with low stock levels or small quantities due to more frequent orders. These costs include;

- Clerical and administrative costs associated with purchasing, accounting for and receiving goods.
- Transport costs
- Production run costs, for stocks which is manufactured internally rather than purchased from external sources.

1.4.4 Stock out costs

If stocks are kept too low, cost associated with running out of stock may arise. These are known as stock and they include the following:

- Lost contribution from lost sales
- Loss of future sales due to disgruntled customers
- Loss of customer good will
- Cost of production stoppages
- Labour frustration over stoppages
- Extra costs of urgent, small quality, replenishment orders.

1.4.5 Objectives of stock control

The overall objective stock is therefore to maintain stock levels so that the following costs are minimized

- Holding costs
- Ordering costs
- Stock outs costs

1.4.6 Stock Control Level

Based on an analysis of the past usage and delivery times, a series of control levels can be calculated and used to maintain stocks at their optimum level (in other words a level which minimizes costs). These levels will determine when to order and how many to order.

1. **Re-order level (When to order).** This is the level of materials at which a new order for supply of materials is to be placed. It is set after considering the following matters;
 - The expected usage or rate of consumption,
 - The time interval between initiating an order and its receipt referred to as lead-time,
 - The minimum inventory or safety stock.

The order point is reached when inventory on hand and quantities due in are equal to the lead time usage quantity plus the safety stock quantity. The following formula is applied;

$$\text{Re-order level} = \text{Maximum usage} \times \text{Maximum lead time}$$

2. **Minimum stock level.** It represents the quantity below which the stock of an item should not be allowed to fall. It is essentially a safety stock or buffer stock which acts as a cushion against stock outs.

$$\text{Minimum stock level} = \text{Re-order level} - (\text{average usage} \times \text{average lead time})$$

3. **Maximum stock level.** Represents the quantity above which the stock of any item should not normally be allowed to rise.

$$\text{Maximum stock level} = \text{Re-order level} + \text{Re-order quantity} - (\text{minimum usage} \times \text{minimum lead time})$$

Activity 1: Inventory Control Levels

A large retail with multiple outlets maintains a central warehouse from which the outlets are supplied. The following information is available for part number M

Average usage	350 per day
Minimum usage	180 per day
Maximum usage	420 per day
Lead-time for replenishment	11-15 days
Re-order quantity	6,500 units
Re-order level	6,300 units

Required:

- Based on the above, what is the maximum level of stock?
- What is the approximate number of part Number M carried as buffer stock?

4. Re-order quantity (ROQ)

Re-order quantity is the quantity of stock, which is to be ordered when stock, reaches the re-order level. If the reorder quantity is set so as to minimize the total costs associated with holding and reordering stock, then it is known as the Economic Order Quantity (EOQ).

$$EOQ = \sqrt{\frac{2 \times Co \times D}{Ch}}$$

Ch = the cost of holding one unit of stock for one time period (usually expressed as a percentage of cost per unit per annum)

Co = cost of ordering a consignment from a supplier

D = demand during the time period (usually demand for a year)

E.O.Q = Economic order quantity

Activity 2: Economic Order Quantity

A company has the following details for Component Y which is sold in boxes of 10 components.

Ordering cost	Shs3,200
Purchase price	Shs2,000
Holding cost	10% of purchase price
Monthly demand	1,500 components

Component Y is currently ordered in batches of 240 boxes at a time. The average inventory held is 120 boxes.

Required:

Calculate the annual holding cost and the annual ordering cost for component Y

Activity 3: Economic Order Quantity

A company uses components at the rate of 500 units per month, which are bought in at a cost of Shs1,200 each from the supplier. It costs Shs20,000 each time to place an order, regardless of the quantity ordered.

The total holding cost is 20% per annum of the value of stock held.

Required;

- (a) What is the economic order quantity?
- (b) What is the total cost of annual holding and ordering stock?

1.4.7 The EOQ with discounts**Quantity discounts**

It is often possible to negotiate a quantity discount on the purchase price if bulk orders are placed.

- If a quantity discount is accepted this will have the following effects:
 - The annual purchase cost will decrease
 - The annual holding cost will increase
 - The ordering cost will decrease
- To establish whether the discount should be accepted or not the following calculation should be carried out.
 - Calculate Total Annual Cost with the discount
 - Compare this with the annual costs without the discount i.e. when ordering basing on EOQ

EOQ when quantity discounts are available

The steps involved in calculating the EOQ when quantity discount are available are as follows:

1. Calculate the EOQ, ignoring discounts
2. If the EOQ is smaller than the minimum purchase quantity to obtain a bulk discount, calculate the total for the EOQ of the annual stockholding costs, stock ordering costs and purchase costs.
3. Recalculate the annual stockholding costs, stock ordering costs and stock purchase costs for a purchase order size that is only just large enough to qualify for bulk discount.
4. Compare the total costs when the order quantity is the EOQ with the total costs when the order quantity is just large enough to obtain the discount. Select the minimum cost alternative.
5. If there is a further discount available for an even larger order size, repeat the same calculations for the higher discount level.

Activity 4: EOQ with Discounts

A company uses components at the rate of 500 units per month, which are bought in at a cost of Shs1,200 each from the supplier. It costs Shs20,000 each time to place an order, regardless of the quantity ordered. The supplier offers a 5% discount on the purchase price for order quantities of 2,000 items or more. The current EOQ is 1,000 units.

The total holding cost is 20% per annum of the value of stocks held.

Required:

Should the discount be accepted?

1.5 JUST-IN-TIME METHOD

This is a purchasing and control method in which materials are obtained just in time for production to provide finished goods just in time for sale. A just-in-time manufacturing system requires making goods and services only when the customer, internal or external requires it. JIT requires better coordination with suppliers so that materials arrive immediately prior to their use. Where this technique is applied, there is no need to have stores or ware houses and hence the costs associated with storage are saved. The fundamental objective of JIT is to produce and deliver what is needed, when needed, at all stages in the production process.

Conditions for successful implementation of just in time inventory control system.

- Strong links and shared information with suppliers and customers.
- Satisfied customers.
- A quality production process.
- Computerized ordering and inventory tracking system.
- A smooth movement of materials from process to process.

Activity 5: *EOQ*

Whee Ltd is a retailer of soft drinks. The company has an annual demand of 40,000 crates. The crates are purchased for inventory in lots of 5000 and cost Shs 3000 each. Fresh supplies can be obtained immediately, ordering and transport costs amounting to Shs10,000 per order. The annual cost of holding one crate in stock is estimated at Shs500.

Required:

- (i) Determine the economic order quantity (EOQ). (3 marks)
- (ii) Compute the total annual cost for the company. (4 marks)

1.6 STOCK VALUATION

It is important to be able to distinguish between the ways in which the physical items in the stock are actually valued. In practice a storekeeper may issue goods in the following ways;

- The oldest goods first
- The latest goods received first
- Randomly
- Those which are easiest to reach

There are several ways in which stock may be valued.

- (a) As their selling price - This would not be a prudent method since it would be recognizing profits before making a sale. Stock is therefore not valued in this way.
- (b) As their net realizable value - This is selling price less any cost before the sale. Stock may be valued in this way.
- (c) At their current replacement cost - This method is also known as market price method under which the material issues are priced at the prevailing market price on the date of the issue.

Cost based methods

These methods use historical costs in the pricing and valuation of material issues and unsold or unused stock respectively. These include but not limited to;

1.6.1 FIRST IN FIRST OUT (FIFO)

This method assumes that materials are issued out of stock in the order in which they were delivered into stock. The price of the earliest consignment is taken first and when that is exhausted, the price of the next consignment is adopted and so on. This method is most suitable for use where the material is slow moving and has comparatively high unit cost.

Advantages

- It is a logical method which probably represents what is physically happening. In practice the oldest stock is likely to be used first.
- It easy to understand and explain to managers
- The value of closing stock in final accounts will fairly reflect the current market value of cost since it is valued at the most current prices.
- It is also acceptable under tax authorities because it does not understate profits and thus tax liability.

Disadvantages

- Issues to production may not reflect the current market value cost especially in the periods where there is inflation. This will lead to understated cost of sales, and therefore, higher profits. The higher profit will attract the demand for higher dividends, more bonus and higher tax liability
- It does not provide a good basis for comparing job costs because it is possible for raw materials to be issued at the same time to two jobs but at different prices.
- Under first in first out method, costs are not matched against current revenues on the income statement. The oldest costs are charged against the more current revenue, which can lead to distortion in gross profit and net income.

Activity 6: FIRST-IN FIRST-OUT

Cooper (U) Ltd deals in the purchase and sale of Soft drinks. The company uses first in First Out (FIFO) method to value inventory and on 1 May 2020, the company had opening inventory of 100 cartons valued at shs. 200 per carton.

The following information relates to the month of May 2020;

3	Receipts	400 cartons at Shs 210 per carton
4	Issues	200 cartons
9	Receipts	300 cartons at Shs 212 per carton
11	Issues	400 cartons
18	Receipts	100 cartons at Shs 240 per carton
20	Issues	100 cartons

Required:

Using FIFO prepare a stores ledger card to determine the quantity and monetary value of Cooper (U) Ltd's soft drinks in the store as at the end of May 2020.

1.6.2 LAST IN FIRST OUT (LIFO)

LIFO method is based on the principle that materials entering production are the most recently purchased. In short, material units issued should carry the cost of the most recent purchase. Thus, closing stock is therefore composed of the earliest or the oldest units or valued at the oldest purchase prices.

Advantages

- The cost of materials issued to production will fairly reflect the current market value or cost.
- LIFO method is appropriate for matching cost and revenue.
- LIFO method is most suitable when prices are rising.
- From the perspective of accountants or managers, LIFO overstates the cost of production and is a conservative in closing stock valuation when prices are rising. This leads to lower reported net profits and therefore tax liability.

Disadvantages

- LIFO is often the opposite of what is physically happening and can therefore be difficult to explain to the manager.
- As with FIFO, decision-making can be difficult because of the variations in prices.
- The method is not recognized for tax purposes.
- Inventory valuation does not reflect current market prices and therefore, are useless in the context of current conditions.

Activity 7: *LAST-IN LAST-OUT*

A company constructs equipment to customer specifications using job costing. The following information relates to the count of one of the components for the month of October 2020.

1	Opening Inventory	40 units at Shs 4,500 per unit
5	Purchases	50 units at Shs 4,540 per unit
11	Purchases	50 units at Shs 4,520 per unit
18	Purchases	45 units at Shs 4,600 per unit

During the month, a total of 138 units were issued to production and units were damage and written off.

Required:

Calculate the value of inventory of the component at the end of October using last in first out method

1.6.3 WEIGHTED AVERAGE COST METHOD

This inventory valuation method is used where different quantities of goods are purchased at different unit costs. Under this method, weights are assigned to the cost price on the basis of the quantity of each item at each price. The issue price of the raw materials is the weighted average cost. The cost or price can be computed using the following formula

$$\text{Weighted average cost} = \frac{\text{Cost of opening stock} + \text{Purchase cost of fresh units}}{\text{Units of opening stock} + \text{Number of units newly purchased}}$$

Advantages

- Fluctuations in prices are smoothed out making it easier to use the data for decision making.
- It is easy to administer than FIFO and LIFO because there is no need to identify each batch separately.

Disadvantages

- The resulting issue price is rarely an actual price that has been paid and can run into several decimal places.
- Prices tend to lag behind current market values when there is a general inflation.

Activity 8: WEIGHTED AVERAGE COST METHOD

Using information given in activity 6 (Cooper (U) Ltd), prepare a stores ledger card following the weighted average cost method to determine the quantity and monetary value of Cooper (U) Ltd's soft drinks in the store as at the end of May 2020.

REVISION QUESTIONS

QUESTION 1 PRIME GENERAL MERCHADISE (PGM)

Prime General Merchandise (PGM) deals in the purchase and sale of Purex mineral water. PGM uses First in First out (FIFO) method to value inventory and on 1 February 2020, the company had opening inventory of 105 cartons valued at Shs 1,905,750.

The following information relates to the month February 2020:

Date	Purchases		Issue
	Quantity (cartons)	Unit price(Shs)	Quantity (cartons)
5	100	18,050	
10			112
12	150	18,500	
15	130	18,255	
20			153
22	80	19,000	
24			50
28			65

On 17 February, 2020 returned to supplier 5 cartons being part of the purchase on 5 February 2020.

Required:

Using FIFO prepare a stores ledger card to determine the quantity and monetary value of Purex mineral water in the store as at the end of February 2020.

QUESTION 2

The following records were extracted from the storekeeper's books of Maxim Restaurant As at 30th June, 2020

Details	Quantity (Units)	Price per unit (Ugx)
June 1: Purchases	3,000	9,000
3: Purchases	2,500	9,800
11: Issues	4,000	
15: Purchases	3,000	10,000
17: Returns of 200 units being items issued on 11 th June		
20: Issues	2,100	
25: Purchases	1,200	11,000
27: Damaged units amounting to 120 units being part of the units purchased on 25 th June were detected		
29: Issues	2,300	

Required:

Using the FIFO, LIFO and Weighted Average Cost Pricing method, prepare a stores ledger account for the month of June 2020 highlighting;

- The cost of raw materials to be charged as a production cost in a cost Sheet
- Total purchases made in the month of June 2020
- Value of closing inventory as at 30th June, 2019

QUESTION 3

In May 2020, 1,000kgs of simsim were purchased in three lots;

3 November	400kgs at 3,000/= per kg
11 November	300kgs at 3,500/= per kg
21 November	300kgs at 4,000/= per kg

During the same period four materials requisitions were completed for 200kgs each, on 5, 14, 22 and 27 May.

In order to calculate the actual material cost of each requisition the cost accountant would need to identify physically from which consignment (s) each issued batch was drawn. Such precision is uneconomical as well as impractical, so a conventional method of pricing material issues is adopted.

Using the data in the above example, what is the value of closing inventory and cost of issues using;

- (i) First In First Out (FIFO) price
- (ii) Last In First Out (LIFO) price
- (iii) Weighted average cost price

QUESTION 4

Cereal Plus Ltd deals in the sale and distribution of different cereals. The company was not maintaining a perpetual inventory system for its inventory units recently. Only physical inventory was counted at the end of each month. The physical inventory at the end of December 2020 showed 200 bags of super rice valued at Shs212,000 per bag. The following purchases were made in January 2021:

January 3, 400 bags at Shs218,000 per bag
 January 10, 900 bags at Shs223,000 per bag
 January 15, 400 bags at Shs220,000 per bag
 January 28, 700 bags at Shs213,000 per bag
 January 30, 300 bags at Shs224,000 per bag.

On 31 January 2021 the physical stock was 1,200 bags.

Required:

Calculate the value of inventory on 31 January 2021 using the first in first out method.



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UNIT 4 - Labour Costs



4.0

LABOUR COSTS

UNIT 4 OVERVIEW:

- Measuring labour activity
 - Methods of recording labour costs
 - Accounting for labour costs
 - Remuneration Methods
 - Bonus / Incentive Schemes
 - Labour turnover
 - Labour efficiency, capacity & production volume ratios
-

1.1 MEASURING LABOUR ACTIVITY

Labour is a cost of producing the products/services of the organization. Just as it is necessary to know the cost of materials input into each product the organization produces so it is also necessary to know the amount or cost of the labour time spent on each product as this is also a cost of production.

Methods to relate labour costs to work done

Documentation, calculation and analysis of labour costs are necessary for three reasons;

- To calculate the correct gross pay and net pay for each employee.
- To establish labour costs for the period to be reported in the profit and loss account.
- For management accounting and stock valuations we need to allocate the labour cost of the period to the products produced or operations performed during the period.

1.2 METHODS OF RECORDING LABOUR COSTS

Clock cards - A clock card is a document for recording an employee's starting and finishing time which helps with the ascertaining total actual attendance time.

Timesheets - This is a record of how a person's time has been spent.

Job cards is a record of time spent on a job. For direct workers job cards may also be maintained to record the time spent on particular orders as a basis for cost accounting.

Labour costs - The labour costs are classified as **direct** or **indirect** depending on what caused those costs:

Direct labour costs

Direct labour hours are those hours that are worked directly on producing output. E.g. an employee who works on the production line is considered to be working directly on the product that passes along the production line. Direct labour costs are included in the cost of production for **cost of sales** and **stock valuation figures**. This is done by creating the labour account and debiting the work-in-progress (WIP) account.

Direct workers are those employees who are directly involved in production of output in an organization.

Indirect labour costs

Indirect labour hours are those hours that are worked on the products of the business e.g. a store keeper looking after stock of raw materials, canteen workers' time spent preparing meals for workers, is not related directly to the product produced.

Indirect labour costs are also credited out of the labour account and debited to the production overhead account. It is important that total labour costs are analyzed into **direct** and **indirect** elements.

Indirect workers are those employees who are not directly involved in the production of output e.g. maintenance staff, accountants in a manufacturing firm, factory supervisors and canteen staff.

Indirect labour costs include;

- Overtime premium, idle time, sick pay, holiday pay.

In addition to being paid whilst working (basic, overtime premiums, productivity bonuses, employees are often also paid when:

- on holidays
- ill
- Idle time (time paid for, which is non-productive e.g. sick leave pay, holiday pay, machine breakdown, time spent waiting for work and so on).

Payroll department

The payroll department is involved in carrying out functions that relate input labour costs to the work done.

Preparation of the payroll involves calculating **gross wages** from time and activity records.

The payroll department also calculates **net wages** after **deductions** from payroll (PAYE, NSSF etc.).

The **payroll department** also carries out an analysis of **direct wages**, **indirect wages** and **cash** required for payment.

1.3 ACCOUNTING FOR LABOUR COSTS

Labour costs are expenses and are recorded in an organization's income statement. Accounting transactions relating to labour costs are recorded in the labour account.

Direct labour costs: all hours worked x normal hourly rate

Idle Time

Idle time or down time is time paid for that is non-productive. Idle time can be classified into avoidable and unavoidable idle time.

Avoidable idle time could be caused by;

- Production disruption (e.g. machine breakdown, shortage of materials, inefficient scheduling, poor supervision of labour and so on)
- Policy decision (e.g. this might include run-down of stocks, retraining schemes and so on)

Unavoidable idle time is time that cannot be helped, an uncontrolled or un-necessary cost of the business.

In **double entry**, the system is as follows:

Dr Work-in-progress with the gross wages

Cr Wages control account with the gross wages

Dr Work-in progress with the employer's payroll tax

Cr Wages control account with the employer's contributions to payroll tax

Dr Wages control account

Cr Cash as employee paid the net amount

Cr Cash as the revenue authorities are paid employee deductions and employer contributions.

Activity 1:

Show the following transactions in wages control account

- (a) 31 March, gross wages calculated as Shs3,600,000; deductions for employees taxes = Shs800,000
- (b) 31 March, employer's payroll tax calculated as Shs400,000
- (c) 1 April, employees paid amounts due
- (d) 15 April, tax authorities paid amounts due

1.4 REMUNERATION METHODS

Labour remuneration methods have an effect on the following

- The cost of finished products and services
- The morale and efficiency of employees

There are three basic approaches to remuneration, time work, piece work schemes and Bonus/incentive schemes.

Time work scheme

Under this scheme, employees are paid a basic rate per hour, day, or week irrespective of production achieved.

Basic time rate provides no incentive productivity and close supervision is necessary, so bonus or commissions are often paid to encourage efficient and effective working.

The formula for time work scheme is as follows;

Total wages = (hours worked x basic rate of pay per hour) + (overtime hours worked x overtime premium rate per hour)

Overtime:

Overtime is the extra time worked by an employee beyond normal working hours. Overtime hours are usually paid for at a premium, over and above the basic hours for the period.

When employees work overtime, they receive a basic pay element and overtime premium.

Example 2

Brandon is paid a basic rate of Shs20,000 per hour and overtime is paid at a time and a half. What is Brandon's gross pay for 24 hours of overtime worked?

Solution

Basic pay for overtime worked (24 hours x Shs20,000)	=	Shs480,000
Overtime premium (24 hours x Shs20,000 x ½)	=	<u>Shs240,000</u>
Gross pay	=	<u>Shs720,000</u>

Example 3

Tim is a direct labour employee who works a standard 35 hours per week and is paid a basic rate of Shs2,500 per hour. Overtime is paid at a time and a third. In week 8 he worked 42 hours and received a Shs30,000 bonus.

Required;

Compute Tim's

- Basic pay for the normal working hours
- Basic pay for overtime hours worked
- Overtime premium
- Bonus pay
- Direct and indirect labour costs.

Suggested solution:

(a) Basic pay for normal working hours	=	(35 hours @ Shs2,500)
	=	Shs87,500
(b) Basic pay for overtime hours	=	(42 hrs – 35 hrs) x Shs2,500
	=	Shs17,500
(c) Overtime premium	=	(7hrs x Shs2,500 x 1/3)
	=	Shs5,833.33
(d) Bonus pay (already given)	=	Shs30,000

- (e) Analysis of wages between **direct** and **indirect** labour costs

	Direct labour cost Shs	Indirect labour cost Shs
Basic pay for normal working hours	87,500	
Basic pay for overtime hours	17,500	
Overtime premium		5,833.33
Bonus pay		<u>30,000.00</u>
Total	<u>105,000</u>	<u>35,833.33</u>

Treatment of overtime pay

Where overtime is worked as a general company's requirement, overtime basic for direct workers is a direct cost and overtime premium is an indirect cost. However, if overtime is worked in order to meet a particular customer's request, then both overtime basic and overtime premium are regarded as direct cost.

Piece work Scheme

Piece-work scheme is where a fixed amount is paid per unit of output achieved, irrespective of time spent.

Close supervision is required to ensure work performed is of required standards. The formula for a piece work scheme is as follows;



Total wages = (Units produced x rate per unit)

There are two main piece work schemes that you need to know about: straight piece work and differential piecework.

Straight piece work - These schemes are almost extinct today as employees are more likely to be paid a guaranteed minimum wage within a straight piece work system.

Differential piecework scheme - Under this scheme, employees are paid at different piece rates basing on the levels of production and they are the most commonly used type of piecework scheme.

Example 4

A company operates a differential piece work scheme and the following weekly rates have been set;

Weekly production	Rate of pay per unit in this band (Shs)
1 to 500 units	200
501 to 600 units	250
601 and above	550

Employees are paid a guaranteed minimum wage of Shs130,000 per week. How much should be paid to the following employees for the week?

Employee A – output achieved = 800 units

Employee B – output achieved = 570 units

Solution

Employee A = (500 units x Shs200) + (100 units x Shs250) + (200 units x Shs550)
= Shs235,000

Employee B = (500 units x Shs200) + (70 units Shs250)
= Shs117,500

As this is below the guaranteed minimum wage, employee B will be paid Shs130,000.

Example 5

The following information relates to the wages paid to workers for a four week period in a factory weaving department where two products, blanket and bed sheets are manufactured.

All workers are paid at hourly rates. Basic rates (gross) are Shs 800 per hour for direct workers and Shs 600 per hour of indirect workers for a 40 hour week.

The management employs 24 direct workers and 9 indirect workers. Overtime is regularly worked to meet general production requirements, and paid at a premium of 25% over the basic rate for all workers. Overtime hours in the four week period were 256 and 84 for direct and indirect workers respectively.

Production of the two products during the four week period was:

Blankets – 9,640 units in 1,620 hours of direct workers' time.

Bed sheets – 22,800 units in 2,270 hours of direct workers' time.

The balance of direct workers' time in the period was non-productive time.



The net wages paid (i.e. net of deductions) in the period were;

Direct workers	Shs 2,509,000
Indirect workers	Shs 715,000

The factory uses batch costing system, based on actual costs which are integrated with financial accounts.

Required

- (i) Calculate the gross wages, for the four week period in the weaving department for both direct and indirect workers.
- (ii) Prepare the weaving department's Wages control Account for the period showing detailed workings to justify the calculation of direct and indirect wages.

1.5 BONUS / INCENTIVE SCHEMES

These schemes were introduced to compensate those employees who are paid under a timework scheme for their inability to increase earnings by working more efficiently.

Incentive schemes can be aimed at individual and/ or groups.

Principles of a good incentive scheme

There has recently been strong criticism of incentive schemes or payment by results method, both on the part of employers and employees. This is often due to deficiencies in the design, introduction or administration of the scheme. Considerable thought must, therefore, be given before introducing incentives. Thus the principles of a good incentive scheme are:

- The incentive plan should be understood by all employees before installation or hiring.
- All direct labour tasks should be on an incentive basis.
- Once the standard is set, it should not be changed unless the method changes.
- The scheme should not be open to manipulation and there must be adequate checks on times, quantities and quality of production.
- The basis of calculating the bonus should be clear.
- No limits should be placed upon the amount of additional earnings under the scheme.
- The scheme must be properly communicated to employees
- The scheme should be reasonably permanent.
- The cost of establishing and operating the incentive plans should be reasonable.

Forms of incentive schemes

Some of the important wage plans are briefly discussed here with practical examples they include;

1. Halsey Premium bonus scheme
2. Halsey-Weir Premium bonus scheme
3. Rowan plan

1. Halsey Premium bonus scheme

In this plan, incentive is given to a worker who is fast and completes work before the standard time to complete a job. However, a minimum base-wage is guaranteed to a worker, who completes the job up to the standard time, fixed for this job. Under this plan, standard time for doing each job or work is fixed. Workers are paid at a rate per hour for the actual time taken by them. If a worker takes standard time or more than standard time to complete his work, he is paid wages for the actual time taken by him at the time rate. But if a worker takes less than the standard

time, he is paid a bonus equal to 50% of the time saved at the time rate fixed. Thus under this system, total earnings of a worker is equal to wages for the actual time taken by him *plus* a bonus.

The formula for calculating bonus and total earnings is as follows:

$$\text{Bonus} = 50\% \text{ of } (\text{Time Saved} \times \text{Time Rate})$$

$$\text{Total earnings} = \text{Time rate} \times \text{Time Taken} + 50\% (\text{Time Saved} \times \text{Time rate})$$

Example 6

The data below relates to rates of pay for labour at XYZ Ltd

Standard time = 10 hours

Rate per hour = Shs 20,000

If an employee works for 6 hours, calculate his earnings under the Halsey incentive plan.

Suggested solution

$$\begin{aligned} \text{Total Earnings} &= \text{Shs. } (20,000 \times 6 \text{ hrs}) + 50\% \times \{(10 \text{ hrs} - 6 \text{ hrs}) \times \text{Shs}20,000\} \\ &= \text{Shs}120,000 + \text{Shs}40,000 = \text{Shs}160,000 \end{aligned}$$

$$\text{Total effective rate of earnings per hour} = \frac{\text{Total wages}}{\text{Time Taken}} = \frac{\text{Shs}160,000}{6} = \text{Shs}26,667$$

NOTE:

If the percentage of bonus to be given to the worker is not mentioned then it should be taken as 50%.

Advantages of Halsey Premium Plan

- Beneficial to efficient worker.
- It guarantees a minimum time wage to all the workers. Thus slow and relatively inefficient workers have nothing to fear from it.
- The benefits of time saved are shared by both employers and workers, so it is helpful in reducing labour cost per unit.
- Bonus is separately calculated for each job. Time saved by a worker on one job is adjusted against excess time taken by him on another job.
- A fixed overhead per unit is reduced with increase in production.
- As a result of reduced cost of production by having reduced labour cost and reduced fixed overhead cost per unit, the employer is induced to provide the best possible equipment and working conditions.

Disadvantages of Halsey premium Plan

- It does not provide the employer with full protection against high rate setting.
- Extra efficiency of a worker is not fully rewarded.
- Workers criticize this method on the ground that the employer gets a share of the benefit of the time saved.
- Quality of worker suffers because workers are in a hurry to save more and more time to get more pay.

2. Halsey - Weir System

The Halsey - weir is a variation of the **Halsey Premium Plan**. The percentage of time saved is employed as a bonus is fixed at 30%. As in the Halsey plan, the value of the time saved is divided between the employer and the worker but a smaller share goes to the worker. The average worker is guaranteed a minimum time wage and the efficient worker may earn little more than minimum.

Its drawback is that it does not offer sufficient incentive to the workers.

$$\text{Total Wage} = \text{Time Taken} \times \text{Standard Rate} + 30\% \text{ of } (\text{Save Time} \times \text{Standard rate})$$

Example 7

Using data of XYZ Ltd in the example above, calculate the total earnings of the worker using Halsey-Weir premium bonus plan.

Suggested solution:

$$\begin{aligned} \text{Total Earnings} &= \text{Shs. } (20,000 \times 6 \text{ hrs}) + 30\% \times \{(10 \text{ hrs} - 6 \text{ hrs}) \times \text{Shs}20,000\} \\ &= \text{Shs}120,000 + \text{Shs}24,000 = \text{Shs}144,000 \end{aligned}$$

3. Rowan Plan

Under this system, the worker gets the hourly rate for the actual time taken by him to complete the work. He gets a bonus if he completes the work before the standard time. The bonus hours are calculated as a proportion of the **time taken** which the **time saved** bears to the **time allowed**, and is paid for at a time-work rates.

Its formula is as follows:

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time Taken} \times \text{Time Rate}$$

$$\text{Earnings} = (\text{Time Taken} \times \text{Time Rate}) + \text{Bonus}$$

Example 8

An employee has 10 hours allowed to complete the job, his hourly rate is Shs20,000. He takes 6 hours to complete the job. Calculate bonus and total earnings under the Rowan plan.

$$\text{Bonus earned} = \frac{10 - 6}{10} \times 6 \times \text{Shs}20,000 = \text{Shs}48,000$$

$$\text{Total earnings} = (6 \text{ hrs} \times \text{Shs}20,000) + \text{Shs}48,000 = \text{Shs}168,000$$

Advantages of Rowan Plan

- Fixed overhead cost per unit is reduced with increase in production.
- The quality of work does not suffer much. The worker is not induced to rush through the work because bonus increases at a decreasing rate at higher levels of efficiency.
- It protects the employers against loose rate setting.
- It guarantees time wages to workers
- Checks over-speeding, overstrain by worker.

Disadvantages of Rowan Plan

- In case of extra efficient workers, bonus is less than under Halsey plan. This is so when time saved is more than time taken.
- The plan is criticized by workers because they do not get full benefit of time saved by them as they are paid bonus for a portion of the time saved.
- Discourages workers to over-achieve.
- Difficulty in ascertaining wages as it requires large data processing.
- Sharing of profit for-achievement may not be liked by workers.

1.6 LABOUR TURNOVER

Labour turnover refers to the movement of employees in and out of an organization. It also refers to the percentage of workers who leave an organization and are replaced by new employees. Although different types of turnover exist, the general definition is that turnover occurs when the employment relationship ends.

Causes of labour turnover

All causes of labour turnover may be subdivided into: personal causes, avoidable causes, unavoidable causes.

Personal causes:	Avoidable causes	Unavoidable causes
<p>Sometime workers leave the organization at their own will and management can do nothing in this regard.</p> <p>These are known as personal factors which include the following:</p> <ul style="list-style-type: none"> ○ Change for better job, ○ Marriage especially female workers, ○ Domestic responsibilities say, to look after old parents, premature retirement due to ill health and old age, ○ Discontentment over the job or working environment 	<p>These causes may be eliminated by taking suitable measures by the firm.</p> <p>Avoidable causes include:</p> <ul style="list-style-type: none"> ○ Low wages and earnings ○ Dissatisfaction with job, ○ Bad relations among workers and between workers and supervisors, ○ Long and odd working hours ○ Unfair methods of promotion and lack of promotional avenues. ○ Seasonal nature of industry , ○ Non availability of raw materials, power etc and bad working conditions. 	<p>This is the situation where workers have to leave the organization because of management requirements and actions. These include:</p> <ul style="list-style-type: none"> ○ Dismissal, Accident or illness rendering workers permanently incapable to work, ○ Retrenchment or lay off due to shortage of resources, ○ Low demand, seasonal nature of business, Change in plant location, marriage especially in case of female workers.

Cost of Labour Turnover and reduction of Labour Turnover

Preventive Costs	Replacement costs	Reduction of labour turnover - An
<p>These include all costs which are incurred to prevent workers from leaving the organization and keeping them satisfied. These include:</p> <ul style="list-style-type: none"> ○ Cost of providing good working conditions. ○ Cost of providing benefits like pension, gratuity etc. ○ Cost of providing medical, housing and other recreational facilities. ○ Cost of providing educational facilities to children of the employees. <p>The treatment of preventive costs in cost accounts should be distributed among different</p>	<p>These are costs which are incurred for the recruitment and training of new workers.</p> <p>They arise on account of labour turnover and consequential replacement of employees. These include:</p> <ul style="list-style-type: none"> ○ Cost of training new workers. ○ Cost of breakages of tools and equipment ○ Costs of spoilage and defectives ○ Loss of output due to interruption of production, inefficiency of new workers ○ Recruitment and selection cost <p>The treatment of replacement costs in cost accounts should be</p>	<p>appropriate labour turnover accounting can be adopted to manage labour turnover efficiently and effectively. The following steps may be taken to reduce the labour turnover:</p> <ol style="list-style-type: none"> 1. Encouraging labour participation in management 2. An appropriate suggestion box scheme should be introduced. 3. A suitable personnel policy should be framed for employing the right person for the right job. 4. Non-monetary benefits should be introduced. 5. Fair rates of pay and allowances and other monetary benefits should be introduced.

departments on the basis of workers in each department.	shared by the departments affected by the labour turnover on the basis of number of workers replaced.	6. Providing better working conditions. 7. An effective employee grievance redress procedure should be introduced. 8. Introduction of incentive schemes.
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Measurement of labour turnover

The following are the main methods for calculating labour turnover.

Labour turnover with separation: commonly known as separation method which is influenced by the number of employees that leave the organization. In short, it takes into account only those workers who have left during a particular period. It is calculated as:

$$\text{Labour Turnover Rate} = \frac{\text{No. of workers left during a period} \times 100}{\text{Average no. of workers in the period}}$$

Replacement Method: This method takes into consideration only the actual replacement of labour irrespective of the number of persons leaving. If new workers are employed on account of expansion of business, they are not included in replacements. Thus, it is calculated as follows:

$$\text{Labour Turnover Rate} = \frac{\text{No. of replacement in a period} \times 100}{\text{Average no. of workers in the period}}$$

Flux Method: It denotes total change in the composition of labour force due to additions and separations of workers. It is calculated thus:

$$\text{Labour Turnover Rate} = \frac{\text{No. of separations} + \text{No. of additions} \times 100}{\text{Average no. of workers in the period}}$$

Note: Average number of workers in a period = No. of workers at the start of the period plus number of workers at the end of the period/2

Example 8

From the following, calculate the labour turnover rate using;

- Separation method
- Flux method
- Replacement method

Number of workers at the beginning of year = 3,800

Number of workers at the end of the year = 4,200

During the year 40 workers left while 160 workers are discharged. 600 workers were recruited during the year, of these 150 workers were recruited because of leavers and the rest are engaged in accordance with an expected expansion scheme.

Suggested solution

$$\text{Average number of workers during the year} = 3,800 + 4,200/2 = 4,000$$

$$\text{For separation method: Labour Turnover rate} = \frac{200}{4,000} \times 100\% = 5.0\%$$

$$\text{For flux method: Labour Turnover Rate} = \frac{150 + 200}{4,000} \times 100\% = 8.7\%$$

$$\text{For replacement method: Labour Turnover rate} = \frac{150}{4,000} \times 100\% = 3.7\%$$

1.7 LABOUR EFFICIENCY, CAPACITY AND PRODUCTION VOLUME RATIOS

Labour is a significant cost in many organizations and it is important to continually measure the efficiency of labour against pre-set targets.

The labour efficiency ratio measures the performance of the workforce by comparing the actual time taken to do the job with the expected time using “standard hours”

A standard hour of production is the number of production units which should be achieved by worker working in the standard way at the standard rate for one hour.

The labour efficiency ratio is calculated as follows;

$$\frac{\text{Expected hours to produce output}}{\text{Actual hours to produce output}} \times 100\%$$

Labour capacity ratio

The labour capacity ratio measures the number of hours spent actively working as a percentage of the total hours available for work (full capacity or budgeted hours)

$$\text{Labour capacity ratio} = \frac{\text{No. hours spent working (active production)}}{\text{Total hours available (budgeted)}} \times 100\%$$

Labour production volume ratio

Labour production volume ratio compares the number of hours expected to be worked to produce actual output with the total hours available for work (full capacity or budgeted hours)

$$\text{Production volume ratio} = \frac{\text{Expected hours to produce actual output}}{\text{Total hours available (budgeted)}} \times 100\%$$

Example

Standard time allowed per unit	=	30 minutes
Actual output in period	=	840 units
Actual hours worked	=	410
Budgeted hours	=	400

REVISION QUESTIONS

Question 3 June 2015

Fantastic Ltd, a manufacturer of a single product Omega, employs 20 skilled workers. The company is considering introducing a Halsey incentive scheme (with 50% bonus) of wage payment of increasing the labour productivity to cope with increased demand for its product by 25%. The company feels that if the proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers, it could act as sufficient incentive for them to produce more and it has accordingly given this assurance to the workers.

As a result to the assurance, an increase in productivity has been observed as revealed by the following data for the current month.

Guaranteed hourly rate of wages (Shs)	10,000
Average time allowed for producing 1 unit by a worker at the previous performance (hours)	4
Number of working days in a month	25
Number of working hours per day for each worker	8
Actual production during the month (units)	6,000

Required:

- Calculate the effective rate of earnings per hour. **(9 marks)**
- Calculate the savings to the company under this scheme. **(7 marks)**
- Explain any **four** merits and any **four** demerits of the Halsey incentive scheme. **(4 marks)**

Question 4 (b) June 2015

Purant Cleaning Services Ltd was awarded a street cleaning contract for the year ending 31 March 2015 in Moroto Town Council. The following data was extracted from the contract operations.

Budgeted distance to be cleaned (km)	19,000
Budgeted labour hours	6,500
Budgeted price per hour (Shs)	7,000
Actual labour hours worked	4,800
Actual distance cleaned (km)	15,000
Standard labour hours	4,250

Required:

Calculate the:

- volume ratio **(2 marks)**
- capacity ratio **(2 marks)**
- efficiency ratio **(2 marks)**

Question 2 (b) - November 2014

X Ltd operates a factory and employed 80 throughout a four-week period just ended. Direct workers are paid at a basic rate of Shs 15,000 per hour for a 38 hour week. Total hours for direct workers in the four-week were 10,900. Overtime worked to meet general production requirements is paid at a premium 40%. Employee deductions for NSSF are 30% of gross wages. 900 hours of direct workers were registered as idle.

Required:

Prepare journal entries to account for the labour costs of direct workers. **(11 marks)**

Question 5 (a) – November 2014

Maji Maji Ltd uses a standard costing system. An extract from their manufacturing records for the month of July 2014 is shown below:

Budgeted output (units)	70,000
Budgeted labour costs (Shs)	100,000,000
Budgeted labour hours	100,000
Actual output (units)	65,000
Actual labour hours paid	105,500
Productive labour hours	99,000
Actual labour costs (Shs)	99,800,000

Required:

Calculate the following ratios:

- | | | |
|-------|------------|------------------|
| (i) | Capacity | (3 marks) |
| (ii) | Activity | (3 marks) |
| (iii) | Efficiency | (3 marks) |



Harvest Training and Consultancy Uganda Ltd.

trainers & bookkeepers

COST & MGT ACCOUNTING - PAPER 7

UNIT 5 - Accounting for Overheads



5.0

ACCOUNTING FOR OVERHEADS

UNIT 5 OVERVIEW:

- Direct and Indirect expenses
 - Overhead costs: An Introduction
 - Overhead cost sharing process
 - The concept of overhead absorption
 - Journal entries for overheads
-

1.1 DIRECT AND INDIRECT EXPENSES

Direct expenses are expenses that can be directly identified with a specific cost unit or cost center.

- There are few examples of direct expenses but royalties paid to a designer or fees paid to a subcontractor for a specific job could be classed as direct expenses.
- Direct expenses are part of the **prime** cost of a product.

Indirect expenses cannot be directly identified with a specific cost unit or cost center.

- The cost of renting a factory is classified as an indirect cost as the rent could be covering the manufacturing location of all products and also possibly other areas of the business such as the accounting department, a non-production location. It is not possible to relate the rent to a single product or location.
- Indirect expenses are part of the **overheads** of a business.

1.2 OVERHEAD COSTS

Overhead costs are defined as common costs representing an aggregate of **indirect costs** which include **indirect materials costs, indirect labour costs and indirect expenses**. These are costs that cannot be identified with a specific cost centre or cost units because they are normally incurred for the benefit of more than one product or cost unit.

The overheads cost sharing process provides the basis for attaching indirect costs to a business' products or services. Overheads are usually split into the following;

- **Production overheads**

These are the indirect costs of manufacturing a cost unit. It comprises of indirect materials consumed in the factory, indirect factory wages and other indirect expenses incurred in connection with production.

- **Administration overheads**

These are the costs of formulating policy, directing and controlling operations not related directly to production, selling, distribution or research and development.

- **Marketing, Selling and Distribution Overheads**

These are marketing costs incurred in securing orders, publicizing and presenting to customers the products of the undertaking in suitably attractive forms at acceptable prices and delivery of the goods to customers. It also includes the costs of after sales services or processes.

- **Research and Development Overheads**

These are the costs of seeking new ideas, materials, methods of production and improved products and the development and design of such ideas so that they can be applied to formal production.

Overheads which are associated with production are termed as **production** overheads whereas those not associated with production are known as **non-production overheads**.

Overheads may also be classified on the basis of behavior such as variable overheads, semi-variable overheads and fixed overheads.

Variable overheads comprise of expenses which vary in proportion to the changes of volume of production. For example, utilities etc.

Fixed overheads comprises of expenses whose value do not change with change in volume of production such as salaries, rent etc.

Semi-variable overheads are partly affected by change in the production volume. They are further segregated into variable overheads and fixed overheads

Examples of indirect expenses (overheads) are as follows;

- Factory rent
- Depreciation of equipment or factory
- Heating costs for a factory
- Lighting costs for a factory
- insurance

1.3 OVERHEAD COST SHARING PROCESS

Failure to link or identify overhead costs with specific cost centres and cost units makes it hard to assign them to products. The fact that they are manufacturing costs they should make part or constitute product, service or job cost. Even though the exercise is complex, the cost Accountant has to ensure that all factory overhead costs are captured and assigned to different cost centres and cost units on an arbitrary basis. In an attempt to assign common costs to cost centres and thereafter to cost units or jobs, there should be a system in place which must encompass the following stages.

1. Collection and classification of overheads.
2. Allocation and apportionment of overheads to cost centres.
3. Re-apportionment of service department costs to production departments.
4. Absorption of overheads of each production department to cost units products.

1. Collection and classification of overheads

This involves the sourcing or gathering of common or overhead costs from different sources. The main sources include may invoices, stores requisition notes, wages analysis sheet, etc. the collected overhead costs are grouped into different categories for better analysis. Factory overheads can therefore be grouped as fixed overheads, Semi-variable costs and variable overhead costs.

In case of mixed costs, it may be difficult to segregate variable costs from fixed costs during the exercise of classification. Separating the two is important because of different information requirements (cost object) and the need to apply different costing techniques. Specific methods that can be used in separating them include the following;

- High - Low method or Range method.
- Method of Least squares or Regression method.
- Scatter graph method or visual fit.
- Simultaneous Equations.

These were discussed under cost classification (i.e. in behavioral cost classification)

2. Allocation and apportionment of overheads (Primary distribution)

Overhead Allocation

This is the assignment of overheads to cost centres or departments directly without sharing. Allocation of overheads is done only if they can be directly identified with the cost centre or department. However, a cost that cannot be allocated can be apportioned or distributed to cost centres.

Overhead Apportionment

Refers to the distribution or the sharing of indirect costs by different cost centres using a fair and equitable basis of apportionment. The bases to be used are influenced by the nature of costs to

be apportioned. The main purpose of allocation and apportionment of overhead costs to cost centres is to ensure that all costs that cannot be identified with cost centres (indirect costs) are directly linked to the costs centres at the end of the exercise. Thus, the allocation and apportionment ensure that all overhead costs are directly traced to the cost centres involved. Possible apportionment bases used include the following:

Apportionment bases

It is considered important that overheads should be shared out on a fair basis. The bases of apportionment for the most usual cases are given below;

Overheads

Bases

Rent	}	Floor area occupied by each department.
Rates		
Heating & lighting		
Repairs & depreciation of building		
Depreciation, insurance of equipment		Cost of book value of equipment
Personnel office, canteen, welfare,	}	Number of staff or labour hours worked in each cost centre.
Wages and office costs, first aid		

Example 1

KT Cuts, the producer of tinned beef has the production and service cost centres which include w, x, y & z. the company employs cleaners who are attached to each department and getting the wages as indicated below.

Department & Cleaner	Area occupied by Department in Square metres	Wages (Shs)
w - Jim	200	200,000
x - Jom	250	300,000
y - Tim	180	250,000
z - Tom	<u>120</u>	<u>150,000</u>
Total	<u>750</u>	<u>900,000</u>

Required:

- Allocate the above costs to cost centres involved
- Assuming the whole factory (i.e. all departments) is cleaned by only one employee, say Jim, and is paid a total of indirect cost wages) of Shs900,000. Apportion total indirect cost to cost centres using area as the apportionment base.

Suggested solution

(i) **Allocation:** Since individual indirect costs can be identified with specific cost centres, the costs involved can be assigned as follows;

Allocation of indirect costs

Overhead cost	Assignment base.	Total	Dept. w	Dept. x	Dept. y	Dept. z
Indirect wages	Allocation	900,000	200,000	300,000	250,000	150,000

(ii) **Apportionment:** Since the total of UGX900,000 is paid to one person (Jim) who cleans the entire factory the cost incurred benefits many departments hence, should be shared by the departments using the area occupied by each as a base. The results are shown below.

Apportionment of indirect costs

Overhead cost	Assignment base.	Total	Dept. w	Dept. x	Dept. y	Dept. z
Indirect wages	Floor area	900,000	240,000	300,000	216,000	144,000

Overhead costs apportioned = $\frac{\text{Total overheads} \times \text{area occupied by the departments}}{\text{Total area}}$

3. Re-apportionment of service cost centre costs to production cost centres

The primary distribution of overheads assigns all overhead costs to the different departments or cost centres. It is however important to further assign service department costs to production departments. This is due to the reason that service departments do not themselves manufacture anything, but the production departments or cost centres which perform manufacturing activities. The service departments only facilitate the production departments to undertake the production process. The **re-assignment** or **re-apportionment** of service department costs to production departments or cost centres is termed as **secondary distribution**.

These costs are re-apportioned to production departments depending on how each production department has benefited from the service department or the extent to which a service department has been used by the production department. The main purpose of re-apportioning such costs is to ensure that all overhead costs incurred in production are directly linked to production cost centres.

Examples of service cost centres are as follows:

- Stores
- Canteen
- Maintenance department
- Payroll department

The service department costs are therefore distributed to production departments using any of the following approaches.

(i) Direct approach

(ii) Elimination /step approach

(iii) Repeated distribution method

(iv) Simultaneous equations/algebraic method

(i) Direct Approach

Service department costs are distributed to production departments on the basis of how service departments have been used by production centres. This approach does not consider inter-service costs i.e. costs associated with services offered to other service departments by others. The cost of service department is apportioned directly to the production departments. The following procedure is always followed:

- Determine the basis of apportioning each service cost,
- Determine in terms of the base the amount or service provided to each of the other departments and,
- Using the amount of service provided to each department, apportion each service department cost to the production department.

(ii) Elimination or Step method

This approach is guided by the following steps. These steps are carried out to guide the person concerned to identify the overheads to be redistributed first.

One should first ascertain,

- The service department that has been or will be used by the largest number of departments.
- If two or more service departments are used or will be used by an equal number of other departments, then determine the service department with the highest overhead cost.
- The order of apportionment is based on the answers of the above two steps. This means that that if there is the service department that has served most departments, the one can start by apportioning the overhead costs under that department or else start by apportioning the highest service departments' overhead costs.
- Determine the basis of apportioning each service cost and apportion each service department cost using the amount of service provided in each department.
- Once the service department costs are re-apportioned, no further apportionments are made to that department.

(iii) Repeated distribution method

This approach is also known as continuous apportionment. Each of the service cost centre overheads will be continuously re-apportioned until the amount to be re-apportioned becomes insignificant, then re-apportionment is ignored.

(iv) Simultaneous equations method

Simultaneous equations method starts by establishing the exact overhead costs accumulated by each service department. It does this by formulating and solving the simultaneous equations. After getting the exact service department costs, the latter are assigned to production departments following the level of utilization by each department.

Example 2

The following is data extracted from the cost accounts of KT Ltd for the month of August 2019

Cost centres/Departments		Indirect material costs	Indirect Wages
Production Departments	X	190,000	180,000
	Y	240,000	220,000
	Z	40,000	60,000
Service Departments	A	300,000	200,000
	B	80,000	130,000

Other overheads

Power and Lighting	1,200,000
Rent	560,000
Insurance on Machinery	200,000
Canteen charges	600,000
Depreciation costs	400,000

The following bases have also been given.

Particulars	X	Y	Z	A	B
Floor area (sq. meter)	4,000	4,000	3,000	2,000	1,000
Value of machinery (Shs'000')	10,000	12,000	8,000	6,000	4,000
Kilowatts (units)	4,000	4,400	1,600	1,500	500
No. of employees	90	120	30	40	20

Required:

- (a) Prepare an overhead analysis sheet (Departmental distribution summary using the above departmental data.
- (b) Re-apportion service department costs using:
- (i) **Direct method** if the following data are given

	X	Y	Z	A	B
Maintenance (A)	40%	30%	20%	-----	10%
Stores (B)	30%	30%	20%	20%	-----

- (ii) Elimination method and
- (iii) Repeated distribution, if the following data are given.

	X	Y	Z	A	B
Maintenance (A)	40%	30%	20%	-----	10%
Stores (B)	30%	20%	20%	30%	-----

(iv) Simultaneous/ algebraic method, if the data in (i) above is used

Suggested Solution:

(a) Allocation and apportionment (Primary distribution)

Overhead costs	Allotment base	Total	X	Y	Z	A	B
Total							

After allocation and apportionment of overhead costs to cost centres, all overheads are identified with cost centres or departments. However, since service departments have incurred the costs while serving the production departments, it means that the costs the service departments have incurred should be shared by production departments. The next stage, therefore, is to re-apportion service department costs to production departments using appropriate allocation approach.

(i) Using direct method

	Allotment base	Total	X	Y	Z	A	B
Total overheads		4,600,000	1,260,000	1,480,000	560,000	900,000	400,000
Apportionment of A costs							



Apportionment of B costs							
Total							

(ii) Elimination/step method

	Allotment base	Total	X	Y	Z	A	B
Total overheads		4,600,000	1,260,000	1,480,000	560,000	900,000	400,000
Apportionment of X costs							
Apportionment of B costs							
Total							

As stated before, once the service department's costs have been apportioned, no further apportionment should be made to that department. On the apportionment of Y department costs, no assignment should be made to department X. The total overhead cost under department Y (i.e. UGX490,000) has been apportioned using the following ratio 3:2:2.

(iii) Repeated distribution method

	Total	X	Y	Z	A	B
Total overheads	4,600,000	1,260,000	1,480,000	560,000	900,000	400,000
Total						

The service cost centres that serve each other are continuously re-apportioned to each other until the figure becomes so small that we will ignore the fact of the reciprocal service.



- (iv) **Simultaneous/Algebraic Equations method.** As said before, this method begins by establishing the total overhead costs accumulated by all service departments including, the inter-service costs. This is done by first solving the formulated simultaneous equations as indicated below.

Suggested Solution

Simultaneous/Algebraic Equations method

	Total	X	Y	Z	A	B
Total overheads	4,600,000	1,260,000	1,480,000	560,000	900,000	400,000
Apportionment of A costs						
Apportionment of B costs						
Total						

1.4 THE CONCEPT OF OVERHEAD ABSORPTION

This is the process of assigning overhead costs to products or services produced. Overheads are absorbed into products by first calculating the overhead absorption rate and then applying the calculated overhead absorption rate to determine the overhead absorbed by each cost unit.

The absorption of overhead costs to products involves a two stage process, and these include:

- (i) Calculation of overhead absorption rates.
- (ii) Charging of overheads to cost units/products.

(i) Calculation of Overhead Absorption Rates (OAR) - It is also known as the overhead recovery rate and represents the rate that is usually applied in absorbing overheads to cost units. Hence, overhead absorption rate is used to charge overhead costs to cost units or products. Companies may either use overhead **blanket rates** or **multiple rates**.

The blanket overhead rate represents a single rate for the entire factory. This means that regardless of the number of cost centres in a factory the one overhead absorption rate can be used. It is computed as follows:

$$\text{Blanket rate} = \frac{\text{Total overheads for the entire factory}}{\text{Total number of units of the base for the factory}}$$

Blanket rate should not be used unless the output is in the same unit of measurement.

Multiple overhead absorption rates represent a number of separate rates for each department. These are predetermined by relating either the budgeted overhead or actual overheads of the cost centre to the budgeted or actual base applicable to a cost centre as shown below:

OAD = $\frac{\text{Total budgeted/Actual overheads of a cost centre}}{\text{Total budgeted/ Actual base applicable to a cost centre (e.g. no. of units, machine hours)}}$

The denominator to be used will be influenced by the base units used in absorbing overhead costs. This implies that firms can use different absorption base units to absorb overhead costs to cost units. Since different bases can be used, different methods can also be applied in determining overhead absorption rates.

Bases of absorption

The main purpose absorption costing is to recover production overheads by charging a reasonable share of the organization's fixed amount overheads into each unit of production that is produced.

- Overheads can be absorbed into cost units using the following absorption bases:

1. Machine Hours method (when production is machine intensive). Overhead Absorption Rate (OAR) or Machine hour rate (MHR) is calculated as follows: -

$$\text{OAR (MHR)} = \frac{\text{Overheads of the Cost Centre}}{\text{Machine Hours of the Cost Centre}}$$

The production overheads will be absorbed to cost units or products using machine hours of each production department.

2. Direct Labour Hours method (when production is labour intensive). The resulting labour hour rate is determined as under:

$$\text{OAR (LHR)} = \frac{\text{Overheads of the Cost Centre}}{\text{Direct Labour Hours of the Cost Centre}}$$

Production overheads will be absorbed to cost units using direct labour hours of each department.

3. Units of output method (calculated as a rate of rate per unit). The unit might be a kilogram, litre, ton etc. The overhead absorption rate is calculated as under:

$$\text{OAR} = \frac{\text{Overheads of the Cost Centre}}{\text{Units of output of the Cost Centre}}$$

This means that the overheads will be absorbed basing on the units of output of each production department (i.e. Rate per unit of output).

4. Percentage of direct wages method: Applying factory overheads on the basis of direct wages expended on any job or product is so far the simplest method. It is established by using the following formula:

$$\text{OAR} = \frac{\text{Overheads of the Cost Centre}}{\text{Direct wages of the Cost Centre}} \times 100$$

Under this approach, production overheads are charged to products or cost units using direct labour cost percentage rate.

5. Percentage of direct material cost method. Sometimes, the factory overheads are assigned on the basis of materials consumed by products. Evidently, the overhead rate is determined

by dividing estimated overhead costs for the period by the cost of material. Using this method, OAR can be calculated as follows: -

$$\text{OAR} = \frac{\text{Overheads of the Cost Centre}}{\text{Direct Material Cost of the Cost Centre}}$$

Here, overhead costs will be charged to products or cost unit using direct material cost percentage rate.

6. Percentage of prime cost method: The prime cost basis combines the total of direct material cost and direct labour cost and uses this total as a basis for charging overhead. Under this approach, the absorption rate is calculated as follows:

$$\text{OAR} = \frac{\text{Overheads of the Cost Centre} \times 100}{\text{Prime Cost of the Cost Centre}}$$

Absorption basis which you are most likely to meet quite often are; number of units produced, direct labour hours or machine hours.

Example 3

Calculate six different overhead absorption rates (OARs) for a production department using the following budgeted data

○ Labour Hours for the period	2,000
○ Direct wages for the period	Ugx1,000,000
○ Direct materials for the period	Ugx3,000,000
○ Machine hours for the period	1,600
○ Units produced during the period	500
○ Total overhead of the department	Ugx1,000,000

(ii) Charging or absorbing overhead costs to cost units or products

The final is to allocate or charge overhead cost to products that pass through the production departments using the calculated OAR. Here overheads are charged or absorbed to individual cost units as of overhead absorption rate (OAR) and the units of the base that apply to each cost unit, as given by the formula below;

$$\text{Overhead absorbed} = \text{OAR} \times \text{Actual Units of the base.}$$

Example 4

Using the previous overhead analysis sheet (where simultaneous equations method was used) and additional information below;

- (a) Calculate OARs for departments X, Y and Z, assuming that Dept. X has budgeted to use 1,000 Machine hours in a period, Dept. Y uses 4,000 machine hours and Dept. Z uses 2,000 labour hours.
- (b) Assuming product N is to be produced by the same company and requires the following hours in the following departments.

Department X	-	20 Machine hours
Department Y	-	40 Machine hours
Department Z	-	60 Labour hours

Determine the total amount of overheads to be absorbed or charged to product N in each production department.

Assignment

Soft-line Ltd makes three products x, y and z. each passes through two departments. Machine and Assembly

Labour hours used in each department by each product

	Machining	Assembly
Product x	1 hour	1 hour
Product y	2 hours	½ hours
Product z	none	4 hours

Production is expected to be as follows:

Production x (1,000 units), product y (2,000 units) & product z (500 units)

Overheads are expected as follows;

	Machining	Assembly
	Shs100,000	Shs150,000

Complete the following

- (i) Machining department OAR per hour
- (ii) Assembly department OAR per hour
- (iii) Blanket OAR per Hour
- (iv) Overhead absorbed by product y using a separate department overhead rate

1.5 JOURNAL AND LEDGER ENTRIES FOR MANUFACTURING OVERHEADS

Production overheads account

Direct costs of production (direct materials, labour and expenses) are debited in the work-in-progress (WIP) account whereas indirect costs (overheads) are collected in the production overhead account.

Non-production overheads are debited to the following;

- Administration overheads account
- Selling overhead account
- Distribution overhead account
- Finance overhead account

Production overheads include rent, heating and lighting, insurance, depreciation of equipment and factory, indirect materials and indirect labour.

Absorbed production overheads are credited to the production overheads account and debited in the work-in-progress account.

Any difference between the actual and absorbed overheads is transferred to the income statement.

Treatment of under or over-absorption of overheads

Overheads absorbed to products involve the use of predetermine overhead absorption rates. This is calculated using budgeted figures as follows;

$$\text{O.A.R} = \frac{\text{Budgeted overhead expenditure}}{\text{Budgeted activity level}}$$

$$\text{Overhead absorbed} = \text{O.A. R} \times \text{Actual level of activity}$$

The rate used is based on estimates of both the numerator and the denominator and is quite unlikely that either one or both of the estimates will agree with the actual levels. Actual overheads incurred will either be greater or less than the overheads absorbed.

If either or both of the estimates for budgeted overheads and budgeted level of activity are different from actual results for the period, then this will lead to one of the following;

- Under-absorption of overheads
- Over-absorption of overheads

Under-absorption of overheads - This is when overheads absorbed are less than actual overheads incurred. Under-absorption of overheads means that the firm has charged lower overhead costs to products than it has actually incurred. This normally happens when the firm operates below the budgeted activity level. This basically means that part of the overhead costs recovered from clients through selling price is lower than what you have actually paid or incurred. In short, the cost of the product or service is understated and therefore, the unit selling price.

Over-absorption of overheads - This is when overheads absorbed are greater than actual overheads incurred. Over-absorption of overheads implies that the firm has charged or absorbed more overhead costs to products than it has actually incurred. This happens when the firm operating above the budgeted level of output or above the normal capacity level. This practically means that you are recovering more overhead costs from the clients through a selling price than what you have actually incurred. Hence, the cost of the product or service is overstated and therefore, the unit selling price.

Effects of under or over-absorbed overhead cost to company profits

Under-absorption of overheads represents the cost that should have been incorporated in production costs and it has not been done. Unit cost has been understated. This excess, therefore, represents a loss which should be charged against profits in the profit and loss account. The implication of this on the company's performance is twofold.

- (i) Company profits will be eroded by the excess costs (under absorbed amount) that will be charged against profits in profit and loss account.
- (ii) Since the cost price is understated and therefore, the selling price, company sales are understated and mark-up will be affected adversely.

Likewise, over-absorption of overheads represents the gain which is charged to profit and loss account as additional income. This gain is a result of extra costs recovered from the client and not actually incurred by the company. Over-absorbed overhead costs therefore,

- (i) Increase the company's profits because of excess costs recovered from the client,
- (ii) Leads to higher selling price which may lead to increased company sales. However increased selling price may scare away clients and affect the company's market share price.

If both budgeted overhead expenditure and activity levels are the same as actual results, then there will be no over or under-absorption of overheads.

Causes of over-/ under-absorption of overheads include;

- *Wrong estimation of overhead expenses* - the actual overhead expenses may be substantially less or more than the estimated amount.
- *Wrong estimation of work done* - The amount of work done may greatly exceed or may be substantially less than the estimated work. For example, if actual work is 8,000 working hours against estimated working hours of 10,000, then the expenses charged to job will be 20% less.
- *Seasonal fluctuation in overheads* - Due to seasonal nature of work, overheads may fluctuate from one period to another period.
- *Under or over utilization of capacity* - There may be under over absorption of overheads due to under or over utilization of productive capacity.
- *Wrong estimation of output* - when the actual output substantially differs from the anticipated output, it leads to under or over-absorption of overheads.

Example 5

The following data relates Downtown Ltd for period 2

	Budget	Actual
Overheads	Shs80,000	Shs90,000
Labour hours worked	20,000	22,000

Required;

Calculate the over-/ (under-) absorption of overheads

Suggested Solution:



Assignment

The following data relates to Downtown Ltd for period 3

	Budget	Actual
Overheads	Shs148,750	Shs146,200
Machine hours	8,500	7,928

Required;

Calculate the over-/ (under-) absorption of overheads.





Harvest Training and Consultancy Uganda Ltd.

trainers & bookkeepers

COST & MGT ACCOUNTING - PAPER 7

UNIT 6 - Specific Order Costing Methods



SPECIFIC ORDER COSTING METHODS

UNIT 6 OVERVIEW:

- Introduction
 - Job Costing
 - Batch Costing
 - Contract
-

1.1 INTRODUCTION

This covers approaches used in ascertaining the cost of products and services which are unique in nature and produced to meet customers' orders. The approach is designed to establish the cost of single units which are made to meet customers' specific requirements. This costing method is applied where the work consists of separate contracts, jobs or batches. The main subdivision of specific order costing are;

- (a) Job Costing method
- (b) Batch costing method
- (c) Contract costing method

1.2 JOB COSTING METHOD

This represents a form of specific order costing method that specializes in ascertaining the cost of the single and unique jobs that take short period of time to perform or accomplish. Job costing is a costing method applied to determine the cost of specific jobs or lots of production generally manufactured according to customers' specifications. This approach is adopted in industries which have heterogeneous outputs where a number of products are produced in a discontinuous manner, one different from the other. A job in this case may be a product, batch, product, contract, activity among others.

The approach is commonly used in industries like printery, carpentry workshops, garages for motor repairs among others.

The work relating to a job is usually carried out within a factory or workshop and moves through process and operations as a continuously identifiable unit. The main aim of job costing is to identify the costs associated with completing the order and to record them carefully.

Individual jobs are given a unique job number and the costs involved in completing the job are recorded on a job cost sheet or job card.

The selling prices of jobs are calculated by adding a certain amount of profit to the cost of the job.

Rectification costs – these are costs incurred in rectifying substandard output.

These costs are treated in two ways;

- If rectification work is not a frequent, but arises on occasions with specific jobs to which it can be traced directly, then the rectification costs should be charged as a direct cost to the jobs concerned.
- If rectification costs are regarded as a normal part of the work carried out generally in the department, then the rectification costs should be treated as production overheads

Simple format of costing for a job

Direct materials	x
Direct labour	x
Direct expenses	x
Prime cost	xx
Other production overheads	x
Other overheads	x
Cost of job	xx
Profit (may be 20%)	x
Selling price	xx

Activity 1: Job Costing

Furniture World Ltd produces modern wooden doors for customers in Kampala. The type of timber used depends on the specifications of the job. For purposes of providing job cost estimates, each door is identified by the type of shutter used which can be either single glazed (S) or double glazed (D). The following information relates to job AJ 100:

	S	D
	Shs '000'	Shs '000'
Direct materials per door	468	612
Direct labour per door	144	172
Variable costs per door	140	180

In order to produce 500 doors of S and 480 doors of D, fixed costs of Shs 2.2 million for S and Shs 2.4 million for D are incurred.

Required:

Prepare a job cost sheet for a client whose order comprises of 450 doors of S and 320 doors of D



1.3 BATCH COSTING METHOD

This is a form of specific order costing method used where identical items or articles are manufactured as a batch or in a group. Instead of one unit being made in response to a customer's request, a batch of identifiable units is produced. A batch is treated as a job during the course when the batch is being processed. Each batch is a separately identifiable cost unit which is given a batch number in the same way each job is given a job number.

Costs can then be identified against each batch number. For example materials requisitions will be coded to a batch number to ensure that the cost of materials used is charged to the correct batch.

When the batch is completed the unit cost of individual items in the batch is found by dividing the total batch cost by the number of units in a batch.

$$\text{Cost per unit} = \frac{\text{Total production cost of a batch}}{\text{Number of units in a batch}}$$

Batch costing is very common in the engineering component industry, footwear and clothing manufacturing industries.

The selling prices of batches are calculated in the same way as the selling prices of jobs, i.e. by adding a profit percentage to the cost of the batch.

Activity 2: Batch Costing

A company manufactures product J. and has the following budgeted overheads for the year, based on normal activity levels.

Department	Budgeted overheads Shs'000	Budgeted activity
Welding	6,000	1,500 labour hours
Assembly	10,000	1,000 labour hours

Selling and administration overheads are 20% of factory cost. An order for 250 components of product J made as batch 5667, incurred the following costs.

Materials	Shs12,000,000
Labour	100 hours welding shop @ Shs2,500 per hour 200 hours assembly shop @ Shs1,000 per hour

Shs500,000 was paid for the hire of special X-ray equipment for testing the welds

Required;

Calculate the cost per unit for Batch 5667

Solution

The first step is to calculate the overhead absorption rate for the production department.

Welding	=	Shs6,000,000/1,500 labour hours
	=	Shs4,000 per labour hour
Assembly	=	Shs10,000,000/1,000 labour hour
	=	Shs10,000 per labour hour

Total cost for Batch no. 5667

Direct materials		12,000
Direct expense		500
Direct labour:		
Welding shop (100 hrs @ Shs2,500)	250	
Assembly shop (200 hrs @ Shs1,000)	<u>200</u>	
		<u>450</u>
Prime cost		12,950
Overheads:		
Welding shop (100 hrs @ Shs4,000)	400	
Assembly shop (200 hrs @ Shs10,000)	<u>2,000</u>	
		<u>15,350</u>
Factory cost		<u>15,350</u>
Selling and administration cost (20% of factory cost)		<u>3,070</u>
Total cost		<u>18,420</u>

Assignment 1: Job Costing

Global Furniture Ltd (GFL) has received a purchase order from the Ministry of Finance, to supply 10,000 office chairs under the 'Buy Uganda Build Uganda' policy. In order to undertake this job, GFL will need a fixed investment of Shs 60 million and a working capital of 50% of the sales.

Required are 10,000 pieces of timber and 3,500 hours of direct labour of which 1,000 hours is overtime payable at double the labour rate.

The following information is also relevant to the job:

	Amount ("shs)
Timber (per piece)	15
Vanish& accessories	55,000
Labour rate (per direct labour hour)	10
Factory overheads (per direct labour hour)	10
Selling & distribution expenses	30,000
Material recovered as scrap	5,000

GFL expects a net return of 25% on the capital employed.

Required:

Prepare a job cost sheet showing the price GFL should quote.

(6 marks)

SOURCE: CPA(U) May 2019 Qn. 6(c)

Assignment 2: Batch Costing

Nkwanzi Uganda Limited (NUL) manufactures different types of candles for different occasions under three departments: Heating, Molding and Packing. NUL has received an order of 1,200 special dinner candles from Global Hotel Limited (GHL). NUL plans to produce these candles in 5 equal batches in order to minimise production costs. The following cost data relates to a batch:

1. Direct materials:

	Quantity	Unit cost
Candle wax	20 kg	Shs 15,000
Candle wicks	50 meters	Shs 4,000
Molds	20 dozens	Shs 20,000

2. Labour hours required:

Department	No. of hours	Rate per hour
Heating	3	Shs 8,500
Molding	5	Shs 10,000
Packing	10	Shs 15,000

3. NUL will hire a specialised working table at Shs 350,000 for this order.

4. The budgeted production overheads and labour hours are as follows:

Department	Overheads (shs'000')	Labour hours
Heating	5,760	720
Molding	2,700	300
Packing	21,600	1800

5. Factory overheads are absorbed at 5% of prime cost while other overheads are absorbed basing on budgeted labour hours.

6. NUL determines the selling prices at a cost-plus markup of 30%.

Required:

Determine the total cost of a batch and the selling price per candle. (8 marks)

SOURCE: CPA(U) August 2019 Qn. 4(a)



CONTRACT COSTING METHOD

Contract costing, also known as Terminal costing, is a form of specific order costing which applies where work is undertaken to customer's special requirements and each order is of long duration. It is a variant of job costing as each contract is nothing but a job completed. Contract costing is used by concerns like construction firms, civil engineering contractors, ship builders, etc.

Characteristics of contract costing

- (i) Contract work mainly consists of construction activities.
- (ii) Contract work is done on the sites unlike manufacturing that is done under a roof and since the contract is site-based, most of the costs associated with specific contract are direct cost.
- (iii) Duration of contracts is relatively for a long period.
- (iv) Contracts are undertaken to special requirements of the customer.

Job and contract costing compared

The important distinguishing features of job costing and contract costing are as follows:

- (i) While job costing is carried on in the premises, contract work is carried out at the site.
- (ii) Under job costing, an order, or unit, lot, or batch of a product may be taken as cost unit while under contract costing, each contract is a cost unit.
- (iii) Under job costing, cost is first allocated to cost centres and then charged to individual jobs while under contract costing; most of the expenses are of direct nature and are directly charged to respective contract accounts.
- (iv) Under job costing, the prices of jobs are fixed based on the nature of costs and policy of the firm, while in contract costing, the pricing is generally through bidding and external forces have major influence in fixing the offer price.

Accounting Treatment of Contract Costing Items

- (i) **Materials** – materials include items specifically purchased for the contract the ones issued from store against material requisition, and the materials transferred from one contract to another.

The contract account is **DEBITED** with the following:

- Bulk of materials purchased for the contract from suppliers
- Materials obtained from the central store through material requisition notes
- Materials transferred from one contract to another contract.
- Materials remaining at the site at the end of the accounting period (closing stock) after valuation of the same and carried forward to the next period

The contract account is **CREDITED** with the following transactions:

- Materials returned back to the store using the material returned note
- Sale of materials at site on account of some extraneous reasons (cost price)
- Materials transferred to other contracts
- Materials stolen or destroyed by fire.

Any profit or loss on materials account in respect of the following is transferred to the profit and loss account.

- Sale price is different from the cost price
 - Profit or loss resulting from the sale of materials at site
 - Profit or loss resulting from the materials stolen or destroyed by fire.
- (ii) **Labour** – All labour engaged at site and the salaries and wages paid to the labour are treated as direct cost and **DEBITED** to contract account
- (iii) **Direct expenses:** All direct expenses (electricity, insurance, telephone, postage, sub-contracts, architect's fees, etc.) are treated as direct cost and **DEBITED** to contract account.
- (iv) **Overhead cost:** In the case of contract costing, overhead constitute an insignificant part of the total cost of contract account. Such cost may be apportioned on suitable basis and **DEBITED** to the contract account.
- (v) **Plant & Machinery**
- (a) Where a plant has been specifically purchased for a particular contract and will be exhausted on site, the contract account should be **DEBITED** with the cost of the plant. On completion of the contract, the residual or written down value will be **CREDITED** to the contract account. **ALTERNATIVELY**, contract account may simply be **DEBITED** with the amount of depreciation calculated.
- (b) Where plant is sold on completion of the contract, the contract account is **CREDITED** with the sale proceeds.
- (c) When a plant is hired for a contract, a charge for the hire of the plant is made to the contract as a direct expense and **DEBITED** to the contract account.
- (d) If a plant is used for a contract for a short period, there is no need of debiting the cost of the plant to the contract account, Contract account may simply be **DEBITED** with the amount of depreciation calculated.
- (vi) **Sub- contractor** – sometimes due to certain situations, a sub-contractor is appointed to carry out certain special work for the main contract. This special work done by the sub-contractor becomes a direct charge to the main contract and accordingly **DEBITED** to the contract account. The payments made to the sub-contractor are charged to the main contract as direct expenses and no detailed breakup of the same is required. Materials supplied to the sub-contractor are **debited** to the contract account as direct material; machinery, tools, etc. supplied to him on rent should be depreciated on appropriate basis and **debited** to the contract account. Rent received for the use of such tools and machines should be **credited** to the contract account or deducted from the final bill of the sub-contractor.
- (vii) **Work-in-progress (work certified & work uncertified)** – When the contract is not completed till the end of the accounting year, the architect is required to value the work-in-progress (WIP). Such work in progress is classified into **work certified** and **work uncertified**.

(a) Work certified: This is that part of WIP which has been approved by the contractee's architect or engineer for payment. Work certified is valued at contract price (i.e. selling price), and includes an element of profit. It appears on the **CREDIT** side of the contract account and also on the assets side of the balance sheet.

$$\text{Value of work certified} = \text{proportion of work done and certified} \times \text{contract price}$$

OR

$$= \frac{\text{Cash Received}}{\text{Ratio of cash received to work certified}}$$

(b) Work uncertified: This is that part of WIP which has not been approved by the architect or engineer. It is valued at cost and does not include an element of profit. It appears on the CREDIT side of the contract account and also on the assets side of the balance

Cost of work uncertified = Ratio of work done but not yet certified to total work done x cost incurred to date

The amount of WIP includes the value of work certified and un-certified appearing in the contract account. WIP may be calculated using the following formulae

$$\text{WIP} = \begin{array}{r} \text{Cost incurred to date} \\ \text{Profit/ (Loss)} \\ \text{Less; Amount received from contractee} \\ \text{Work-in-progress} \end{array} \begin{array}{r} \times \\ \underline{x/(x)} \\ \mathbf{xx} \\ \underline{(x)} \\ \underline{xx} \end{array}$$

OR

$$\text{WIP} = \text{Uncertified work} - \text{unrealized profit}$$

(viii) Profit or loss on completed contracts

When a contract is completed, the overall profit or loss on the contract is transferred to the profit and loss account. When the contract is completed, the contractee is **DEBITED** and the contract account is **CREDITED** with the contract price.

(ix) Profit on Incomplete contracts

Contracts which are started and finished during the same financial year create no accounting problems. However, in the case of those contracts which take more than one year to complete, a problem arises whether profit on such contracts should be taken into consideration after the completion of the contract or whether a portion of the same should be taken into account every year on certain basis. If profit is computed only on the completion of the contract, profit will be high in the year of completion of the contract, whereas in the other years of working on the contract, profit will be NIL. This will result not only in distorted profit pattern but also higher tax liability because income tax at higher rates may have to be paid. Therefore, when contracts extend beyond a year, it becomes necessary to take into account the profit earned (or loss incurred) on the work performed during each year. This helps in avoiding distortion of the year-to-year profit trend of the business.

To determine the **profit** to be taken to the profit and loss account, the following situations may arise.

- (a) **Completion of contract is less than 25%** - in this case, no profit should be taken to the profit and loss account.
- (b) **Completion of contract is equal to or more than 25% complete but less than 50% of the contract price** – The following method should be used for computing the profit to be credited to the profit and loss account.

$$\frac{1}{3} \times \text{Notional profit} \times \frac{\text{cash received}}{\text{work certified}}$$

Notional profit is the difference between the value of WIP certified and the cost of WIP certified and is computed thus

Notional profit	=	value of work certified	x	
		Less: cost of work certified	<u>(x)</u>	
		Notional profit/ (loss)	<u>xx/ (xx)</u>	

- (c) **Completion of contract is up to 50% or more but less than 90%** - The following method is used:

$$\frac{2}{3} \times \text{Notional profit} \times \frac{\text{cash received}}{\text{work certified}}$$

- (d) **Completion of contract is equal to or more than 90% of the contract price:** In this case, the contract is considered to be almost complete. In such cases, the estimated total profit is first determined by deducting the total costs to date and additional expenditure necessary to complete the contract from the contract price. The portion of profit so arrived is credited to the profit and loss account by using any of the following formulae.

$$\text{Estimated profit} \times \frac{\text{work certified}}{\text{contract price}}$$

OR

$$\text{Estimated profit} \times \frac{\text{cash received}}{\text{contract price}}$$

Where **estimated profit** represents the excess of the contract price over the estimated total cost of the contract and computed as follows:

Contract price		x	
Less: Total cost/expenditure already incurred		<u>(x)</u>	
Estimated additional/further expenditure to complete the contract		<u>(x)</u>	
		<u>(x)</u>	
Estimated profit		<u>xx</u>	

Note: If the percentage of completion is not given, it may be arrived using the following formulae;

Either percentage of completion = $\frac{\text{work certified}}{\text{Contract price/revenue}} \times 100\%$

Or
$$\text{percentage of completion} = \frac{\text{Cost to date}}{\text{Total estimated contract cost}} \times 100\%$$

- (x) **Loss on uncompleted contracts** - In the event of a loss on un-completed contracts, this should be transferred in **FULL** to the profit and loss account, whatever is the stage of completion of the contract, however, the practice may vary from firm to firm, but whatever method is adopted, it should be applied consistently from year-to-year so as not to disturb the trend of profits.
- (xi) **Extra work** - Sometimes, the contractor is required to do some extra work like additions or alterations in the work originally done as per agreement. The contractor will charge extra money for such extra work. The cost of such extra work is **DEBITED** to the contract account and extra price realized is credited to the contract account.
- (xii) **Expenses before the commencement of a contract** – Cost incurred by the contractor before a contract is secured are usually treated as period cost and expensed in that period. However, if costs attributable to securing the contract can be separately identified and there is a clear indication that the contract will be secured, the cost may be deferred and **DEBITED** to the contract when secured.
- (xiii) **Payments by the Contractee** - This should be **DEBITED** to Bank if the money is paid into the bank and credited to the contractee's personal account.

Other important considerations in contract costing

- (i) **Retention money and cash ratio** - It is a usual practice not to pay the full amount of work certified. The contractee may pay a fixed percentage, e.g. 80% of the work certified, depending on the terms of the contract. This is known as cash ratio. The balance amount not paid is known as retention money, for example, if cash ratio is 75%, the retention money will be the remaining 25%. This retention money is a type of security for any defective work which may be found in the contract later on. This also works as a deterrent for the contractor to leave the contract incomplete.
- (ii) **Escalation & De-escalation clause** – This clause is often provided in contracts to cover any likely changes in the price or utilization of materials and labour. Thus, a contractor is entitled to suitably enhance the contract price if the cost rises beyond a given percentage. The object of this clause is to safeguard the interest of the contractor against unfavourable changes in cost. The escalation clause is of particular importance where prices of materials and labour are anticipated to increase or where quantity of material and/or labour time cannot be accurately estimated. Just as an escalation clause safeguards the interest of the contractor by upward revision of the contract price, a de-escalation clause may be inserted to look after the interest of the contractee by providing for downward revision of the contract price in the event of cost going down beyond an agreed level.

Escalation claim may be calculated thus:

For material = standard quantity x (Actual price – standard price)

For labour = standard hours x (Actual rate – standard rate)

(iii) **Cost - plus contracts** - This is a type of contract in which the contract price is not fixed at the time of entering into the contract. The contract price is determined by adding a specified amount or percentage of profit to the costs allowed in the contract. The contractee compensates the contractor for all allowable costs actually incurred by him and a percentage of cost as profit.

The items of cost to be included for the purpose of determining contract price are broadly agreed upon in advance. The accounts of the contractor are usually subject to audit by the contractee.

(iv) **Target-price contracts** - In this type of contract, the contractor receives an agreed sum of profit over his pre-determined costs. In addition, a figure is agreed as the target figure and if actual costs are below this target the contractor is eligible for bonus for the savings.

(v) **Mobilization fees** - It is usual for contractors to collect mobilization fees from the contractee before commencement of the construction work. A mobilization fee is an advance payment made to the contractor to enable him buy the equipment, initial materials and provide working capital for the takeoff of the construction. Mobilization fees received should be credited to a special account and transferred to the contractee's account at the end of the contract.

Contract costing format

CONTRACTEE'S ACCOUNT			
	Shs		Shs
Value of work certified	x	Cash received	x
		Retention (bal c/d)	x
	<u>xx</u>		<u>xx</u>
CONTRACT ACCOUNT			
Materials costs	x	Cost of work done c/d	x
Labour costs	x	Materials returned to store/other contact	x
Direct expenses	x	Sale of material at site	x
Depreciation on P & M	x	Materials stolen/destroyed by fire	x
Office & Admin expenses incurred	x	Balance c/d-materials, plant etc	x
	<u>xx</u>		<u>xx</u>
Cost of work done b/d	x	Cost of work certified	x
Notional profit c/d	x	Cost of work finished but uncertified	x
Profit & loss account	x	Notional profit b/d	x
Profit in suspense (reserve)	<u>x</u>		
	<u>xx</u>		<u>xx</u>

REVISION QUESTIONS

QUESTION 1: CPA(U) November 2012 Qn.2(b)

Shelam Engineering Ltd won a contract to construct a shopping mall along Entebbe road. Contract works commenced on 1 July 2011. Costs to 31 December 2011 when the company's accounting year ended were derived from the following information:

	Shs "millions"
Direct materials from the store	360
Materials returned to the store	8
Direct labour	310
Plant issued at book value 1 July 2011	320
Written down value of plant 31 December 2011	480
Materials on site 31 December 2011	32
Overhead costs	40

At 31 December 2011, certificates had been issued for work valued at Shs 1 billion and the contractee had made progress payments of Shs 900 million. The company has calculated that more work has been done since the last certificates were issued and the cost of work done but not yet certified is Shs 160 million.

Required:

- (i) Prepare the contract account. (5 marks)
- (ii) Calculate the profit on the contract. (3 marks)
- (iii) Why is it desirable for contracting companies to include some profit on uncompleted contracts? (2 marks)

QUESTION 2:

The following particulars relate to a contract undertaken by Roko construction:

Materials sent to the site Ugx85,349,000; labour engaged on the site Ugx74,375,000; plant installed at cost Ugx15,000,000; direct expenditure Ugx3,167,000; establishment charges Ugx4,126,000; materials returned to stores Ugx549,000; work certified Ugx195,000,000, cost of work not certified Ugx4,500,000; materials in hand at the end of the year Ugx1,893,000; wages accrued to the end of the year Ugx2,400,000 and unpaid expenditure at the end of the year Ugx240,000. The contract price has been agreed Ugx250,000,000 and cash received from the contract was Ugx180,000,000. At the end of the year, the book value of plant was Ugx11,000,000.



Required;

Prepare the contract account showing profit and show how suitable entries in the balance sheet of the contractors.

QUESTION 3: CPA(U) June 2010 Qn.5(b)

Pioneer Construction Company Ltd commenced the construction of highway on 1 January 2009. The trial balance as at 31 December 2009 showed the following balances:

	Shs '000'	Shs '000'
Paid up share capital		100,000
Cash received on account		120,000
Land & buildings	30,000	
Machinery on site at cost	40,000	
Bank	4,000	
Materials on site	40,000	
Direct labour	55,000	
Expenses at site	2,000	
Vehicles	30,000	
Furniture	1,000	
Office equipment	10,000	
Postage	500	
Office expenses	2,000	
Rates & taxes	3,000	
Fuel & power	<u>2,500</u>	
	<u>220,000</u>	<u>220,000</u>

The contract price is Shs 300 million and work certified is Shs 150 million. The work completed since certification is estimated at Shs 1 million. Machinery costing Shs 2 million was returned to stores at the year end.

Stock of materials at site on 31 December 2009 was valued at Shs 5 million. Outstanding wages were Shs200,000. Depreciation on machinery is at 10%.

Required:

- (i) *Prepare a contract account for Pioneer Construction Company Ltd. (7 marks)*
- (ii) *What would be the value of work in progress taken to the statement of financial position? (3 marks)*



Harvest Training and Consultancy Uganda Ltd.

trainers & bookkeepers

COST & MGT ACCOUNTING - PAPER 7

UNIT 7 - Process Costing



PROCESS COSTING METHOD

This represents a cost accumulation method that establishes the cost of products, services, activities or jobs that pass through a series of sequential stages or processes before they become complete products. It is that form of operations which is used where standardized goods are produced in large volume with continuous production flow. It is a method of cost of accumulation by department or cost centres.

A department is a major functional division in a factory where related manufacturing processes are carried out. Processes are carried out. Processes, in fact, are specific steps, stages or functions performed to a product before it reaches the goods storeroom. The amount of production is determined to a large extent by supply and demand for the product, rather than by specific order. Products are not manufactured to meet customers' specific requirements.

Processing costing is suitable for continuous or mass production of homogeneous products that undergo the same stages or processes. All units of output pass through a particular process and are alike in all economic respects.

Process costing can be applied in industries like breweries, textiles, cement, food products, paper manufacturing, oil processes.

It is important to note that process costing is also used in non-manufacturing industries. Examples include cheque clearing in banks, mail sorting in posting office, food preparation in fast-food outlets.

Features of process costing

- Production is of continuous nature, which implies there will be work in progress, which must be valued.
- Output from one process is usually material input into the next process until the finished product is made in the final process.
- In between processes there are likely to be losses due to spoilage, wastage, evaporation and so on.
- It is possible to build up cost records of cost per unit for closing inventory because production is indistinguishable.
- Output from production may be a single product, joint product or by-product.

Flow of costs in process costing system

In a process costing industry, production moves from process or department to the next until final completion occurs. Each department performs some part of the total operation and transfers its completed production to the next process or department where it becomes the input for further processing. The operation carried out by one department is completely different from the operations carried out by others. The aim of the operation carried out is to change raw material into new and improved form until the finished good is obtained.

The cost accumulation procedure follows the production flow and as production moves from process to process, costs are transferred with it as detailed in the figure below:



The costs of process A, are transferred to process B; process B costs are then added to this cost and the resulting total cost is transferred to process C; process C costs are then added to this cost. Therefore, the cost becomes cumulative as production proceeds and the addition of costs from the last department's costs represent the total of production.

Cost per unit or unit cost of each product is determined at every process and computed by using the general formula below;

$$\text{Unit cost/cost per unit} = \frac{\text{Total Process costs} - \text{Scrap value of Normal Loss}}{\text{Expected output (Input} - \text{Normal loss)}}$$

At every process a process account and other accounts are opened and debited with all resources or costs incurred in carrying out the operation and the resulting accumulated costs representing the cost of output are credited to same account. Other items like gains registered and losses are debited and credited to the account respectively. The figure below shows possible entries in the process account.

PROCESS ACCOUNT

Item	Units	Unit cost	Amount	Item	Units	Unit cost	Amount
Material costs	Xx	x	xxx	Normal loss	xx	x	xxx
Labour costs	xx	x	xxx	Output	xx	x	xxx
Overhead costs	xx	x	xxx	Abnormal loss	xx	x	xxx
Abnormal Again	xx	x	xxx	Closing stock	xx	x	xxx
Total	xx		xxx		xx		xxx

Steps involved in process costing

- Determine output and losses during the process. This involves the following;
 - Determine the expected output
 - Calculating normal losses and abnormal loss/gain
 - Calculating equivalent units if there is closing or opening work-in-progress
- Calculate cost per unit of output, losses and work-in-progress. This involves preparing the statement of equivalent units.
- Calculate the total cost of output, losses and work-in-progress. If there is any closing or opening work-in-progress, there is need to prepare a statement of evaluation.
- Prepare/complete the process A/C.

Dealing with losses in process costing

In most manufacturing processes that involve process costing there will be losses occurring between processes. A loss occurs when the quantity of material output from a process is less than the quantity input. It might be more satisfactory to take long-term view and calculate average unit costs on the basis of average loss over a period of time.

Normal loss is an inherent part of production process due to factors mentioned above occurring for unavoidable reasons. This loss is usually not given a cost.

Abnormal loss is the loss resulting when actual loss is greater than normal loss, and it is given a negative cost.

Abnormal gain is the gain resulting when actual loss is less than normal or expected loss, and it given a negative cost.

Treatment

The cost of normal loss is spread across the expected complete units of good output in the same way as the costs for materials and labour to arrive at a unit cost of production.

The cost per unit should be based on expected output which is represented by total material input minus expected or normal loss.

Abnormal loss is written off to the P & L a/c so as not to offset valuation of units of good output.

Abnormal loss and abnormal gain

- Normal loss is the loss expected during a process and it is given a cost.
- Abnormal loss is the loss occurring when actual loss is greater than normal/expected loss i.e. Actual loss > Expected (Normal loss) or Actual output < expected output.
- Abnormal gain is the loss occurring when actual loss is less than normal/expected loss i.e. Actual loss < Expected (Normal loss) or Actual output > Expected output.

Rules

- Normal loss is given no share of process cost i.e. it is valued at nil
- Cost of output is based on expected good output
- Abnormal gains or losses – these are valued at the same cost as good output and are charged to P & L a/c via abnormal Gain/Loss a/c
- Any balance on the abnormal gain or loss A/c is transferred to P & L a/c

Accounting for scrap

Scrap is that residue of material from certain manufacturing operations that has a relatively minor recovery value. Examples include saw dusts, fillings and molasses.

Revenue from scrap is treated as a reduction in process cost and not an addition to sales revenue. i.e.

$$\text{Cost per unit} = \frac{\text{Total process cost} - \text{Scrap value of Normal loss}}{\text{Total expected output (Input - Normal loss)}}$$

The scrap value of normal loss reduces material cost of the process and the double entry is as follows:

Dr Scrap A/c
 Cr Process A/c (with the scrap value of normal loss)

Scrap value of abnormal loss is used to reduce the cost of abnormal loss, this implies it reduces the rate of P & L A/c and therefore the double entry is as shown below

Dr Scrap A/c
 Cr Abnormal loss A/c (with the scrap value of units of abnormal loss)

However this doesn't pass through the process account.

Scrap value of abnormal gain is treated exactly opposite to the abnormal loss and the double entry is shown below;

Dr Abnormal gain A/c (with the scrap value of abnormal gain)
 Cr Scrap A/c

Also this doesn't pass through the process account.

Example 1

Suppose that 1,000 units of material input into the process cost Shs1,370,000 and output is 900 units if expected loss is 10% of material in and scrapped units from the process sell for Shs200 show the process and scrap accounts.

Suggested solution

Step 1 – Determine output and losses

	Units
Material input	1,000
Expected (Normal) loss 10% x 1,000 (100)	(100)
Expected output	900
Actual output	900
Abnormal gain/(loss)	0

Step 2 – calculate cost per unit of output

$$\begin{aligned} \text{Cost per unit} &= \frac{\text{Total process costs} - \text{Scrap value}}{\text{Expect output (Input} - \text{Normal loss)}} \\ &= \frac{\text{Shs1,370,000} - (100 \times \text{Shs200})}{900} \\ &= \text{Shs1,500} \end{aligned}$$

Step 3 – calculate the cost of output and losses

Output to process 2	=	(900 units x Shs1,500)	=	Shs1,350,000
Normal loss at scrap value	=	(100 units x Shs200)	=	Shs20,000

Step 3 – complete the process account.

Process Account

Particulars	Units	Unit cost	Amount Shs	Particulars	Units	Unit cost	Amount Shs
Material input	1,000		1,370,000	Normal loss O/put to P2	100 900	200 1,500	20,000 1,350,000
	1,000		1,370,000				1,370,000

Scrap Account

Particulars	Units	Shs	Particulars	Units	Shs
Process A/c	100	20,000	Cash/Bank a/c	100	20,000
	100	20,000		100	20,000

Example 2

Kitkat Ltd. has a factory with two production processes, normal loss in each process is 10% and scrapped units out of process 1 sell for Shs50 per unit whereas scrapped units out of process 2 sell for Shs300. Output from process 1 is transferred to process 2 and output from process 2 is finished output ready for sales.

	Process 1		Process 2	
	Units	Shs	Units	Shs
Input material	2,000	810,000		
Material input from P1			1,750	
Added materials			1,250	190,000
Labour and overheads		1,000,000		2,200,000
Output to finished goods			2,800	

Required

Prepare accounts for process 1, process 2, scrap, abnormal loss and abnormal gain.

Suggested solution

Process 1 Account

Determine output and losses

	Units
Material input	2,000
Expected (Normal) loss 10% x 2,000	(200)
Expected output	1,800
Actual output	1,750
Abnormal loss	50

Calculate cost per unit of output

$$\begin{aligned}
 \text{Cost per unit} &= \frac{\text{Total process costs} - \text{Scrap value}}{\text{Expected output}} \\
 &= \frac{(810,000 + 1,000,000) - (200 \times \text{Shs}50)}{1,800} = \text{Shs}1,000 \text{ per unit}
 \end{aligned}$$

Calculate the cost of output and losses

Output to process 2	=	(1,750 x Shs1,000)	=	Shs1,750,000
Normal loss at scrap value	=	(200 x Shs50)	=	Shs10,000
Abnormal loss	=	(50 x Shs1,000)	=	Shs50,000

Complete the process accounts

Process 1 Account

Particulars	Units	Unit cost	Amount Shs	Particulars	Units	Unit cost	Amount Shs
Material input	2,000		810,000	Normal loss	200	50	10,000
Labour &			1,000,00	Abnormal loss	50	1,000	50,000
Overheads			0	O/p to P2	1,750	1,000	1,750,000
	2,000		1,810		1,810		1,810

Scrap Account

	Units	Shs		Units	Shs
Process 1 A/c	200	10,000	Cash/Bank	250	12,500
Abnormal loss	<u>50</u>	<u>2,500</u>	(250 units @ Shs50)	<u> </u>	<u> </u>
	<u>250</u>	<u>12,500</u>		<u>250</u>	<u>12,500</u>

Abnormal Loss Account

	Shs		Shs
Process 1 A/c	50,000	Scrap A/c	2,500
	<u> </u>	P & L (bal fig)	<u>47,500</u>
	<u>50,000</u>		<u>50,000</u>

Process 2 Account

Determine output and losses

	Units
Material input from P1	1,750
Added materials	1,250
Total material input	3,000
Expected (normal) loss 10% x 3,000	(300)
Expected output	2,700
Actual output	2,800
Abnormal gain	100

Calculate the cost of output and losses

$$\text{Cost per unit} = \frac{\text{Total process costs} - \text{scrap value}}{\text{Expected output}}$$

$$= \frac{\text{Shs}(1,750,000 + 190,000 + 2,200,000) - (300 \times \text{Shs}300)}{2,700} = \text{Shs}1,500$$

Calculate the cost of output and losses

Output to FG	=	(2,800 x Shs1,500)	=	SShs4,200,000
Normal loss at scrap value	=	(300 x Shs300)	=	Shs90,000
Abnormal gain	=	(100 x Shs1,500)	=	Shs150,000

Complete the process account

Process 2 Account

	Units	Shs		Units	Shs
Mat I/P from P1	1,750	1,750,000	Output to FG	2,800	4,200,000
Added materials	1,250	190,000			
Labour & overheads		2,200,000	Normal loss	300	90,000
Abnormal gain	100	150,000			
	3,100	4,290,000		3,100	4,290,000

Scrap account

Particulars	Units	Shs	Particulars	Units	Shs
Process A/c	300	90,000	Cash/Bank a/c	200	60,000
			Abnormal gain a/c	100	30,000
	300	90,000		300	20,000

Abnormal gain Account

	Shs		Shs
Scrap A/c	30,000	Process 2 A/c	150,000
P & L (bal fig)	<u>120,000</u>		
	<u>150,000</u>		<u>150,000</u>

Valuation of closing Work-In-Progress (WIP)

In the examples we have so far looked at, we have assumed that opening and closing work in progress inventories are nil. However, it is unlikely that opening and closing work in progress inventories will be nil, we therefore need to consider how to allocate costs incurred in a period between output i.e. finished units and partly completed closing inventory.

With any form of process costing involving closing WIP, we have to apportion costs incurred between completed output and closing WIP. To apportion costs fairly we make use of the concept of equivalent units of production.

Definition

Equivalent units are the notional whole units, which represent incomplete work and which are used to apportion costs between work-in-progress and completed output.

Example 3

Suppose that we have the following account for process 2 for period 5.

Process 2 Account

	Units	Shs '000'		Units	Shs '000'
Material input	1,000	6,200	Finished Goods	800	?
Labour & Overheads			Closing WIP	200	?
	1,000	9,050		1,000	9,050

Assuming that closing WIP is 100% complete for materials and 25% complete for labour and overheads.

Required;

Calculate the value of finished goods and closing WIP

Solution

Assumption made in process costing where materials are added once at the beginning of the process are as follows;

Direct materials. These are added in full at the start of the process and so any closing WIP will be 100% complete in respect of direct materials.

Direct labour and production overheads: these are usually assumed to be incurred at an even rate through the production process, so that when we refer to a unit that is 50% complete, we mean that it is half complete for labour and overheads, although it might be 100% complete for materials.

Statement of equivalent units

Input (units)	Output	Total (units)	Direct Materials		Labour & O'heads	
			equi't Units	%Comp.	Equi't Units	%Comp.
1,000	F.Goods	800	800	100%	800	100%
	Closing WIP	<u>200</u>	<u>200</u>	100	<u>50</u>	25%
		<u>1,000</u>	<u>1,000</u>		<u>850</u>	

Statement of cost per equivalent of output units

Cost element	Total costs Shs '000'	Equivalent units	Cost per equivalent units (Shs)
Direct materials	6,200	1,000	6.2000
Labour & O'heads	2,850	850	3.3529

Statement of Evaluation of output

Output	Direct materials		Lbr & O'heads	Total
	Units	Shs '000'	Shs '000'	Shs '000'
Finished goods	800	$(800 \times 6.20) = 4,960$	$(800 \times 3.3529) = 2,682.32$	7,642.32
Closing WIP	200	$(200 \times 6.20) = 1,240$	$(50 \times 3.3529) = 167.65$	1,407.65
	1,000	6,200	2,849.97	9,050

Complete the process account

Process 2 Account

	Units	Shs '000'		Units	Shs '000'
Material input	1,000	6,200	FG	800	7,642.32
Labour & Overheads		2,850	Closing WIP	200	1,407.65
	1,000	9,050		1,000	9,050

Different rates of input

In many industries materials, labour and overheads may be added at different rates during the course of production.

- Output from the previous process may be introduced into the next process all at once so that closing inventory is 100% complete in respect of materials.
- Further materials may be gradually added during the process so that closing inventory is partly complete in respect of these added materials.
- Labour and overheads may be added at different rates.

Example 4

Gingerbread Ltd. Is a manufacturer of processed goods and that results in process 2 for the month of September 2019 were as follows;

Opening inventory	Nil
Material input from process 1	4,000
Cost input:	Shs'000
Materials from process 1	6,000
Added materials in process 2	1,080
Conversion costs	1,720

Output from process 2 is transferred into the next process.

Closing WIP amounted to 800 units complete as to;

Process 1 material	100%
Added materials	50%
Conversion cost	30%

Required;

Prepare the process a/c for the month of September 2019.

Valuation of opening work in progress using First-In-First-Out (FIFO)

Opening work in progress may be partly complete at the beginning of the period and it should be valued at the cost to date i.e. the same of the costs incurred in the previous period plus those incurred in the current period.

For example if 100 units of opening stock are 70% complete at the beginning of January 2019 equivalent units of production would be as follows;

Equivalent units in the previous period (December 2018)	100 x 70%	=	70
Equivalent units in the current period (January 2019)	100 x 30%	=	<u>30</u>
			<u>100</u>

The FIFO method of valuation deals with production on a first in first out basis. The assumption is that the first units to be completed in any period are the units that were held at the beginning of the period. We then compute the units that were introduced and fully worked on in the same period as the difference between finished goods and opening inventory.

Example 5

The following information relates to process of a three stage production process for the month of August 2019

Opening inventory

300 units complete as:

Materials from process 2	100%	Shs4,400,000
Added materials	90%	Shs1,150,000
Conversion	80%	Shs1,350,000

In August 2019, a further 1,800 units were transferred from 2 at a valuation of Shs27,000,000, added materials amounted to Shs6,6 00,000 and direct labour amounted to Shs3,270,000. Production overheads are absorbed at the rate of 150% of the direct labour cost. Closing inventory at 31 August 2019 amounted to 450 units, complete as:

Process 2 materials	100%
Added materials	60%
Conversion	50%

Required;

Prepare the process 3 account for August 2019 Using FIFO valuation principles.

Suggested Solution:

Valuation of opening work-in-progress using weighted average cost method

It is an alternative inventory valuation method to FIFO, which calculates a weighted average cost of the units produced from both opening inventory and units introduced in the current period.

According to this method no distinction is made between the units of opening work in progress and units introduced in the current accounting period. The cost of opening work in progress is added to the costs incurred during the current period, and completed units of opening work in progress are each given a value of one full equivalent units of production.

Example 6

Lollipop Ltd produces an item, which is manufactured in two consecutive processes. Information relating to process 2 during September 2019 is as follows;

Opening Inventory 800 units

Degree of completion:

Process 1 materials	100%	Shs4,700,000
Added materials	40%	Shs600,000
Conversion costs	30%	Shs1,000,000

During September 2019, 3,000 units were transferred from process 1 at a valuation of Shs18,100,000, added materials cost Shs9,600,000 and conversion costs were Shs11,800,000. Closing inventory as at 30th September 2019 amounted to 1,000 units were 1,000, which were 100% complete with respect to process 1 materials, 60% complete with respect to added materials and conversion work was 40% complete.

Lollipop Ltd. uses a weighted average cost system for the valuation of output and closing inventory.

Required:

Prepare the process 2 account for September 2019

Losses in process and partially completed units

A department with no opening work in progress introduces 1,000 units into the process and 600 units are completed, 300 units are half completed and 100 units are lost (all normal). Losses are determined upon completion. Materials costs are \$5,000 (all introduced at the start of the process) and conversion costs are \$3,500

Note here that all the costs of the normal loss are added to completed production, since it is detected at the completion stage. The closing WIP will not have reached this stage and therefore does not bear any of the loss.

We need to know that however, at what stage in the process, the loss occurs so that we can determine whether the whole loss should be allocated to completed production or whether some of the loss should also be allocated to be the closing work in progress. Alternatively, the loss could be assumed to occur at a specific point, earlier in the process.

Generally, it is assumed that normal losses take place at the stage of completion where inspection occurs. Where such an assumption is made, the normal loss will not be allocated to the closing work in progress, since the loss is related only to units that have reached the inspection point.

JOINT AND BY PRODUCTS

Joint products are two or more products which are output from the same processing operation but which are indistinguishable from each other up to the point of separation. Joint products are of substantial sales value. They often require further processing before they are ready for sale e.g. the oil refining industry.

A by-product is supplementary or secondary product arising as a result of a process whose value is small relative to that of the principle/ main product.

Accounting for Joint products

Joint products are not separately identifiable until a certain stage is reached in the production process. This stage is called the "split of point" sometimes referred to as the separation point. Costs incurred prior to this point of separation are referred to as common or joint costs and the need to be allocated (apportioned) in some order to each of the joint products.

Methods involved in apportioning joint/ common costs include;

Physical measurement - Under this method joint costs are apportioned to the joint products on the basis of the proportion that the output of each bears by weight or volume to the total output.

Relative sales value apportionment - Joint costs are allocated to each product after separation in relation to the income it generates.

Problems in accounting for joint products

How common costs should be apportioned between products, in order to put a value to closing inventories and to cost of sales for each product.

Whether it is more profitable to sell a joint product at one stage of processing or to process a product further and sell it at a later stage.

Example 7

Suppose that common costs incurred in the processing of product X and Y are Shs6,000,000 and output of each product is 1,200kgs and 2,400kgs respectively. The selling prices per kg for products X and Y are Shs8,000 and Shs4,000 respectively.

Required

Determine the common costs incurred by each product using physical measurement and hence profitability for each product.

Solution

Apportioned common costs to product X = $\frac{1,200}{(1,200+2,400)}$ x Shs6,000,000 = Shs _____

Apportioned common costs to product Y = $\frac{2,400}{(1,200 + 2,400)}$ x Shs6,000,000 = Shs _____

	Product X	Product Y
Output (kgs) (a)	1,200	2,400
	Shs'000'	Shs'000'
Sales (Shs4/Shs2)	4,800	4,800
Less apportioned common costs (b)	<u>(2,000)</u>	<u>(4,000)</u>
Profit/ loss (c)	<u>2,800</u>	<u>800</u>
Cost per unit (b)/ (a)	1.667	
Profit per unit (c)/ (a)	2.333	

Example 8

A company operates a manufacturing process which produces joint products A and B, and a by-product C. manufacturing costs for a period total Shs272,926,000 incurred in the manufacture of ;

Product A – 16,000 kgs (selling price Shs6,100)
 B – 53,200 kgs (selling price Shs7,500)
 C – 2,770 kgs (selling price Shs800)

Required

Calculate the cost per kg (to three (3) decimal places of a shilling) of products A and B in the period using market values to apportion joint cost.

Suggested Solution

Sales revenue A (16,000 x Shs6,100) = Shs97,600,000
 B (53,200 x Shs7,500) = Shs399,000,000
 C (2,770 x Shs800) = Shs2,216,000

Net joint costs = Joint costs – income from sale of by-product
 = Shs(272,926,000 – 2,216,000)
 = Shs270,710,000

Apportioned joint costs to A = $\frac{97,600,000}{(97,600,000 + 399,000,000)} \times \text{Shs}270,710,000 = \text{Shs}$ _____

Cost per kg of product A =

Apportioned joint costs of B =

Past Exam Questions

Question 2 June/ 2008

(a) Dot Cosmetics located at Namanve, has been buying crude raw materials which are refined to produce three creams – Hair, Face and Feet. The cost of crude raw materials in the year 2007 was Shs 420 million and the refining department incurred processing costs of Shs 180 million.

The following data relates to the output and sales for the three products during the same year:

Product	output (units) Kg	Sales Shs '000'	Additional processing costs Shs '000'
Hair	620,000	400,000	24,000
Face	4,000,000	860,000	120,000
Feet	440,000	160,000	40,000

The company could have sold the products at the split-off point directly to other processors at a unit selling price of Shs 10,000, Shs 7,000 and Shs 32,000 respectively.

Required:

Compute the net profit earned for each product using the:

- (i) Output method **(6 Marks)**
- (ii) Sales value method **(7 Marks)**

Question 3 Dec/ 2008

- (a) What are main features of process costing distinguish it from other costing methods? **(4 marks)**
- (b) Soda Industries Ltd manufacture soft drinks using process costing to account for costs. Materials are introduced at the start of the process while conversion costs are applied uniformly throughout the process. The following data relate to the period just ended:

Opening work in progress was 900 units at the following degrees of completion:

Materials, 100% complete at Shs 15,000,000

Conversion costs, 60% complete at Shs 10,000,000

Materials introduced were 9,100 units valued at Shs50,460,000

Conversion costs Shs40,920,000

Closing work in progress was 1000 units at the following stages of completion:

Materials 100%

Conversion costs 80%

Units transferred to the finished goods inventory were 7,800.

Required:

Using the FIFO method of valuation:

- (i) Calculate the equivalent units of production. **(2 marks)**
- (ii) Calculate the cost of output transferred to finished goods inventory. **(6 marks)**
- (iii) Calculate closing work in progress. **(3 marks)**
- (iv) Prepare the process account. **(5 marks)**

Activity

- (a) Define the term by-product
- (b) To distinguish between by-products, main products and joint products, there are two checks applied. What are these checks
- (c) Outline the methods for valuing work-in-progress in process costing
- (d) Honeycomb processors Ltd furnished the following information to its part-time management accountant in January 2019

Opening work in progress		4,000 units
Materials	100% complete	Shs75,000
Labour	60% complete	Shs30,000
Overheads	60% complete	Shs15,000
Units introduced into the process		8,000

There are 4,000 units in process and the stage of completion is estimated to be

Materials	100%
Labour	50%
Overheads	50%

8,000 units are transferred to the next process

The process costs for the period are:

	Shs
Materials	1,000,000
Labour	780,000
Overheads	390,000

Required:

Using the average cost method prepare;

- (i) Statement of equivalent production
- (ii) Statement of cost
- (iii) Statement of valuation
- (iv) Process account

Question 4 June, 2018

(a) (i) Define the term 'process costing'. **(1 mark)**

(ii) Identify any **three** features of process costing. **(3 marks)**

(b) Explain any **two** differences between job costing and process costing. **(4 marks)**

(c) Metal and Shaft Ltd produces oil lubricants which pass through 3 processes to completion. The following information relates to Process 3 for the year ending 31 December, 2017.

At the beginning of the period work in progress was 1,000 litres. Values and stage of completion for materials, labour and overheads were as follows:

	Shs '000'	%
Input materials (Process 3)	12,000	100
Materials added	8,600	50
Labour	6,000	60
Overhead	4,000	30

Output of 6,200 litres were transferred from Process 2 at a value of Shs 46,500,000.

Other costs were as follows:

	Shs '000'
Materials added	10,000
Labour	15,500
Overheads	16,500

On 31 December, 2017, there was closing work in progress of 800 litres which were at the following stages of completion.

Input materials	100%
Materials added	50%
Labour	50%
Overheads	60%

Required:

Using first in first out method of stock valuation:

(i) determine the equivalent units and equivalent cost per litre. **(8 marks)**

(ii) determine the value of opening work in progress. **(2 marks)**

(iii) Prepare a process account for Process 3, in litres. **(2 marks)**

(Total 20 marks)



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COST & MGT ACCOUNTING - PAPER 7

UNIT 8 - Absorption and Marginal Costing



ABSORPTION AND MARGINAL COSTING TECHNIQUES

Marginal (variable) and absorption (full) costing techniques are two different ways of valuing the cost of goods sold and finished goods in inventory. With absorption costing production overheads are treated as a product cost and an amount is assigned to each unit. In marginal costing **all fixed overheads** are treated as period costs and are charged in full against the profit for the period.

The application of any of the techniques is influenced by what organizations intend to achieve. However, it is crucial to recognize that none of the above methods is superior to the other.

MARGINAL COSTING

The marginal cost of a unit of inventory is the total of the variable costs required to produce the unit (the marginal cost). This includes direct materials, direct labour, direct expenses and variable production overheads.

No fixed overheads are included in the inventory valuation; they are treated as a period cost and deducted in full lower down the statement of profit or loss.

The marginal production cost is the cost of one unit of product or service which would be avoided if that unit were not produced, or which would increase if one extra unit were produced.

Marginal costing is the principal costing technique used in decision making. The key reason for this is that the marginal costing approach allows management's attention to be focused on the changes which result from the decision under consideration.

The contribution concept

Contribution is the difference between sales and variable cost of sales i.e.

Contribution = Sales price – variable cost of sales.

General Detailed Format for Marginal Costing Profit/ (Loss) Statement

	Shs	Shs
Sales		xx
Less: Variable cost of sales (marginal production costs only)		
Opening inventory	xx	
Variable cost of production	xx	
Less closing inventory	(xx)	
		(xx)
Less other variable cost of sales		(xx)
Contribution		xx
Less: Fixed costs (actually incurred)		(xx)
Profit/ (loss)		xx/ (xx)

Note:

- (i) Both opening and closing inventories are valued at full marginal cost of production.
- (ii) No need for over-/ under- adjustment of overheads. Actual fixed overheads incurred are deducted from contribution earned in the income statement for the period.

ABSORPTION COSTING/FULL COSTING TECHNIQUE

This is a costing technique which treats all costs of production as production costs and non-manufacturing costs as period costs or operating expenses which may include selling and distribution costs, administrative costs, advertising costs among others. It is a technique of inventory costing in which all variable manufacturing costs and fixed manufacturing costs are included in inventory costs.

It should be clearly understood that fixed manufacturing overhead costs are charged to units of output produced on the basis of per unit fixed manufacturing overhead rate obtained by dividing the standard fixed manufacturing overhead by the normal output or budgeted output level as follows:

$$\text{Unit fixed cost/OAR} = \frac{\text{Standard/budgeted manufacturing overhead costs}}{\text{Normal or budgeted output (capacity)}}$$

The computed unit fixed cost implies that for every unit of output produced the amount of unit fixed cost will be recovered by the firm. This means that the level of actual output determines the amount of overheads recovered. If the actual output is greater than the normal level of output, it means more manufacturing overheads than incurred will be absorbed into production costs. This therefore, indicates that there is over absorption of fixed manufacturing overheads. The over absorbed (excess) amount is a credit to the income statement as a gain. This indicates favorable volume or capacity variance. However, if the actual output is below the normal level of output (i.e. unfavorable volume or capacity variance), it means that some of the fixed manufacturing overhead costs have not been absorbed into production manufacturing overhead costs. This represents under-recovery or under absorption of fixed manufacturing costs, which are charged against profits in the income statement.

Note: The causes of under or over absorption of fixed manufacturing costs had earlier been covered under accounting for overheads.

General format for Absorption Costing profit/ (loss) statement

	Shs	Shs
Sales		x
Less: Cost of sales (valued at full production)		
Opening inventory	x	
Variable cost of production	x	
Fixed overhead absorption absorbed	x	
Less Closing inventory	(x)	
		(x)
Un-adjusted Gross profit		xx
Over- / (under-) absorption of overheads		x/(x)
Adjusted gross profit		xx
Less Non-production costs (admin, selling & distribution O/Hs)		(x)
Profit/ (loss)		xx/(xx)

Note:

- (i) Both opening and closing inventories are valued at full cost of production.
- (ii) There is need for over-/under- adjustment of overheads in the absorption costing profit statement, when actual overheads incurred and activity levels are different for budgeted.

Distinction between Absorption costing and Marginal costing techniques

The distinction between the two approaches lies essentially in the treatment of fixed manufacturing overheads. The points of difference are the following:

- 1. Inventory valuation.** The two techniques influence the cost values of closing stock differently. Under absorption costing technique the full cost, including variable and fixed manufacturing costs make the unit cost of the product whereas under marginal costing, the unit cost of the product is made up of only variable cost. Thus the closing stock under marginal costing technique is undervalued as compared to absorption costing technique.
- 2. Recovery of overhead costs.** Under absorption costing technique, overheads form part of the cost of products and are included in the unit cost calculation. With marginal costing technique, fixed manufacturing are charged to the period to which they relate.
- 3. Reporting** - Absorption costing technique enhances the process of external financial reporting and fulfills the requirements of accounting standards, in particular IAS 2. With marginal costing technique, it is not suitable for external financial though it provides best information for control and decision-making.
- 4. Marginal Costing** divides overheads into two broad categories, i.e. **Fixed Overheads** and **Variable Overheads**. Look at the other term Absorption costing, which classifies overheads in the following three categories **Production, Administration** and **Selling & Distribution**.

Example 1:**Question 3 June 2009**

Rho Ltd makes and sells one product. The standard production cost for one unit is as follows:

	Shs
Direct labour (6 hours at Shs 1200 per hour)	7,200
Direct Materials (8 kg at Shs 1400 per kg)	11,200
Variable Production overhead	600
Fixed production overhead	<u>4,000</u>
Standard production cost	<u>23,000</u>

Normal output is 32,000 units per annum and this figure is used for the fixed production overhead calculation.

Costs relating to selling, distribution and administration are:

Variable 20% of sales value

Fixed Shs 36 million per annum

The only variance is a fixed production overhead volume variance. There are no units in finished goods inventory as at 1 January 2009. The fixed overhead expenditure is spread evenly throughout the year. The selling price per unit is Shs 47,000.

The number of units to be produced and sold for the six months period to 30 June 2009 are budgeted as:

Production	17,000
Sales	14,000

Required:

Prepare statement for management showing sales, costs and profits for each of the six months ending 30 June 2009 using:

- (a) Absorption costing method. **(12 marks)**
(b) Marginal Costing method. **(8 marks)**

Reconciling the profit figure given by the two methods

The difference in profit figures reported under the two costing system costing system is due to the different inventory valuation methods used. Whereas marginal costing values inventories at marginal cost of production, absorption costing values inventories at full cost of production. Full cost of production includes an organization's of fixed production overheads.

If closing inventory is greater than opening inventory, absorption costing will report a higher profit than marginal costing. This is because of some of fixed production overhead incurred during the period will be carried forward in closing inventory (which reduces cost of sales)

If closing inventory is lower than opening inventory, absorption costing will report a lower profit than marginal costing. This is because fixed production overheads which had been brought forward in opening inventory, are released and charged to the cost of sales

Reconciling profit figures

	Closing inventory > Opening inventory Shs	Closing inventory < Opening inventory Shs
Marginal costing profit	x	x
Adjust for fixed overheads in stock (Closing inventory – Opening inventory) x O.A.R	<u>x</u>	<u>(x)</u>
Absorption costing profit	<u>x</u>	<u>x</u>

Example 2

Assuming the facts are as in **example 1**, reconcile the profit under the two methods.

Advantages for Marginal costing

- Contribution per unit is constant unlike profit per unit which varies with changes in sales volume. For management purposes, better information about expected profit is obtained from the use of variable costs and contribution in the accounting period.
- There is no under or over absorption of overheads (and hence no adjustment is required in the income statement).
- Fixed costs will remain the same regardless of the volume of production because they are period costs. It makes sense therefore to charge them in full to the income statement to the period under consideration.
- Marginal costing is useful in the decision making process, especially when a particular resource is limited.
- The cost to produce an extra unit is the variable production cost. It is realistic to value closing inventories items at this directly attributable cost.

Advantages of absorption costing

- Absorption costing includes an element of fixed overheads in inventory values (in accordance with IAS 2)
- Analyzing under/over absorption of overheads is a useful exercise in controlling costs of an organization.
- In small organizations, absorbing overheads into the costs of products is the best way of estimating job costs and profits on jobs.
- Fixed production costs are incurred in order to make output; it therefore makes sense to charge output with a share of these costs.
- It ensures the selling set for a product or service is appropriate to cater for all the organization's costs incurred in the process of running an undertaking.
- Where inventory building is necessary, such as in fireworks manufacture, fixed costs should be included in inventory valuations otherwise a series of losses will be shown in earlier period, to be offset eventually by excessive profits when goods are sold.

Activity 1

A company started business on 01 January 2019 making one product only, the cost card of which is as follows;

	Shs
Direct labour	5,000
Direct materials	8,000
Variable production overheads	2,000
Fixed production overhead	<u>5,000</u>
Standard production cost	<u>20,000</u>

The fixed production overhead figure has been calculated on the basis of a budget/ normal output of 36,000 units per annum. The fixed production overhead incurred for the month of January was Shs15,000,000.

Selling, distribution and administration expenses are;

Fixed	Shs10,000,000 per month
Variable	15% of the sales value

The selling price per unit is Shs35,000 and the number of units produce and sold during the month of January 2019 were;

Production	2,000 units
Sales	1,500 units

Required;

Prepare the absorption costing and marginal costing profit statements for the month of January 2019

Activity 2;

Company B produces a single product with the following budget;

Selling price	Shs10
Direct materials	Shs3 per unit
Direct wages	Shs2 per unit
Variable overheads	Shs1 per unit
Fixed overhead	Shs10,000 per month

The fixed overhead absorption rate is based on a volume of 5,000 per month.

Show the operating statement for the month, when 4,800 units were produced and sold under;

- (a) Absorption costing method.
- (b) Marginal Costing method.



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COST & MGT ACCOUNTING - PAPER 7

UNIT 9 - Cost-Volume-Profit Analysis



9.0

COST-VOLUME-PROFIT ANALYSIS

UNIT 9 OVERVIEW:

- General introduction
 - The Breakeven point
 - The Numerical Method of Determining the Breakeven point
 - Breakeven Analysis in a multi-product environment
-

1.1 INTRODUCTION

- The profits of the firm are affected by many factors. Management theory asserts that most of these factors affect profits through 2 major economic variables; that is to say;
 - ↳ Costs / expenses
 - ↳ Volume of output / level of activity
- The CVP analysis hence aims at studying the connection between the 3 variables i.e. cost, volume and profits so that a mechanism is developed to predict their effect on the overall organizational strategy.
- Most organizations aim at profit maximization as a primary objective; this hence makes it inevitable for such entities to control costs and regulate the level of activity of the organization.

1.1.1 Key Definition

- ⇒ *Cost-Volume-profit analysis is an analytical technique or tool that is used to study the behavior of profit in response to the changes in volume, costs and price. Analysis of such factors on profit is an essential step in the financial planning and decision making.*

1.1.2 Objectives of CVP analysis

- ↳ Establish the effect of the level of activity or volume of output on the firm's profits.
- ↳ Determine the minimum sales volume to avoid losses.
- ↳ Establish the most profitable combination of costs and volume.
- ↳ Predict and evaluate the implications of the firm's short-run decisions about fixed costs, variable costs, volume and selling price for its profit plans on a continuous basis.

1.1.3 Methodology of the CVP analysis

- The CVP technique follows the **Contribution approach**. Under this approach, there is separation between fixed costs and variable costs.
- Contribution is then computed as: $\text{Contribution} = \text{Unit selling price} - \text{Unit variable cost}$.
- Where: variable costs are those expected to vary with the level of activity.

1.1.4 Importance of CVP Analysis

- ↳ Helps management ascertain the breakeven point of the entity. Here, management determines the minimum level of sales required to avoid losses.
- ↳ Helps management determine the sales level required to earn a target or desired profit.
- ↳ Helps management determine the firm's margin of safety.

1.2 THE BREAKEVEN POINT

1.2.1 Definition

- **The Breakeven Point** is the point at which the enterprise neither makes profits nor losses.
- At the breakeven point, the total revenue is equal to total costs (i.e. the intersection point of total revenue curve and total cost curve).
- The breakeven point can be determined using 2 approaches, that is to say;
 - (i) Numerically (Using mathematical models)
 - (ii) Graphically (Using the breakeven charts)

1.3 THE NUMERICAL METHOD OF DETERMINING THE BREAKEVEN POINT

2.3.1 The Breakeven point in units

At breakeven point, the units, q , that can be produced and sold are given by;

$$q = \frac{\text{Fixed Costs}}{\text{Unit Selling Price} - \text{unit variable cost}}$$

But, **contribution = (unit selling price – unit variable cost)**

Therefore;

$$q = \frac{\text{Fixed Costs}}{\text{Contribution per unit}}$$

2.3.2 The Break-even point in monetary terms (shillings)

The breakeven point in monetary terms gives the value of sales that must be made by the firm to breakeven. Therefore;

$$\text{Sales at breakeven point (BEP in shillings)} = \frac{\text{Fixed costs}}{\text{Contribution to sales ratio (C/S ratio)}}$$

The contribution to sales ratio is also referred to as the Profit / volume ratio (P/V ratio)

Therefore;

$$\text{Sales at breakeven point (BEP in shillings)} = \frac{\text{Fixed costs}}{\text{P/V Ratio}}$$

Where;

$$\text{Profit – volume ratio (P/V) or C/S ratio} = \frac{\text{Total contribution}}{\text{Total sales}} \times 100\%$$

Alternatively;

$$P/V \text{ or } C/S \text{ ratio} = \frac{\text{selling price} - \text{variable cost}}{\text{selling price}} = \frac{\text{unit contribution}}{\text{unit selling price}} \times 100\%$$

Activity 1

A company makes a single product with the selling price of UGX20,000 and unit variable cost of UGX 12,000. Fixed costs incurred include production costs of UGX40,000,000 and administration costs of UGX20,000,000.

Required:

- (a) Calculate the number of units to breakeven
- (b) Contribution sales ratio
- (c) Sales at break even point

1.4 TARGET PROFIT

To earn any amount of profit, the company has to operate beyond the breakeven point. The units to be produced and sold in order to get the planned or desired profit may be determined as follows;

$$q = \frac{\text{Profit} + \text{fixed costs}}{\text{Unit contribution}}$$

Alternatively;

$$q = \frac{\text{Profit} + \text{fixed costs}}{\text{Unit selling price} - \text{unit variable cost}}$$

Activity 2

ABC (U) Ltd produces and sales a single product to its customers. The following data were extracted from the books of the company covering the month of December 2014.

	UGX
Annual fixed costs	10,000,000
Expected selling price per unit	20,000
Variable cost per unit:	
Production cost	9,000
Selling & distribution	7,000

A profit of UGX 2,000,000 is planned.

Required

- (a) How many units should be produced and sold in order to make the plan possible?
- (b) Determine the amount of profit that can be made to get the profit above.

Activity 3

A company expects to sale 10,000 units. The variable cost per unit is UGX 1,000 and annual fixed costs of UGX 20,000,000.

Required

- What price would be charged in order to breakeven at a given level of activity?
- Using the price calculated in (a) above, determine the amount of units that should be sold in order to yield a desired profit of UGX1,000,000.

2.5.1 Target profit after tax

The profit goal or desired profit may be stated in terms of profit after taxes. In such scenario, the following formula applies.

$$\text{Amount of units that can be produced and sold} = \frac{\text{Fixed cost} + \frac{\text{Desired profit}}{1 - \text{tax rate}}}{\text{Unit selling price} - \text{unit variable cost}}$$

$$\text{Sales value (to earn desired profits)} = \frac{\text{Fixed cost} + \frac{\text{Desired profit}}{1 - \text{tax rate}}}{\text{Contribution ratio (C/S ratio)}}$$

Activity 4

XYZ (U) Ltd plans to earn an after tax profit of UGX. 1,200,000. The unit selling price and variable cost amount to UGX10,000 and UGX6,000 respectively. The fixed costs are estimated to amount to UGX20,000,000.

Required

Given that the corporation tax rate is 30%; compute

- The number of units that should be produced to enable the firm earns the desired profit.
- What is the amount of sales value at the desired profit level?

1.5 MARGIN OF SAFETY

- This represents the difference between current operating activity level and the breakeven sales or quantity.
- The margin of safety measures how far the company is beyond the breakeven point. It is the level; of sales below which sales must drop before the company starts experiencing losses.
- The firm is safer where its margin of safety is high. A low margin of safety may result in the firm having a low C/S ratio. When both the margin of safety and the C/S ratio are low, management can think of the following possible intervention;
 - Increase the selling price on the premise that the sales volume will not be affected,
 - Reduce on the variable costs by making some improvements in the manufacturing process
- Excess sales/revenue above the breakeven point is the margin of safety of sales (S-P) and excess amount above the optimum quantity is margin of safety in units.
- Therefore; using the mathematical approach, the margin of safety can be derived as follows;

- This gives a summary of the above derivatives as follows;

$$\text{Margin of safety (units)} = \frac{\text{Target profit}}{\text{Unit contribution}}$$

$$\text{Margin of sales (UGX)} = \frac{\text{Target profit}}{\text{C/S ratio}}$$

Activity 5

PQR (U) Ltd targets a profit of UGX500,000 in the month of February 2015. It has been established that the following data are available;

Unit selling price	5,000
Unit variable cost	1,000
Fixed costs	1,200,000

Required

- Determine the company's margin of safety in units and shillings.
- Determine the relative margin of safety (in percentage terms).

Breakeven charts and P/V charts

The measures that we previously calculated (breakeven point, Margin of safety and so on) can also be determined by drawing and interpreting the following graphs:

- Breakeven charts
- Contribution breakeven charts
- P/V charts

It is important that you are able to identify the points that represent the margin of safety, breakeven point, total contribution, fixed costs, variable costs and budgeted sales on the graphs that we are going to study in this chapter.

Breakeven charts

- A break even chart has the following axes.
- A horizontal axis showing the sales/ output (in value or units)

A vertical axis showing Shs for sales revenue and costs

(a) The sales line;

- Starts at the origin
- Ends at the point signifying expected sales

(b) The fixed costs line;

- Runs parallel to the horizontal axis
- Meets the vertical axis at a point which represents total costs

(c) The variable costs line;

- Starts at the origin
- Ends at the point signifying expected sales

(d) The total cost line

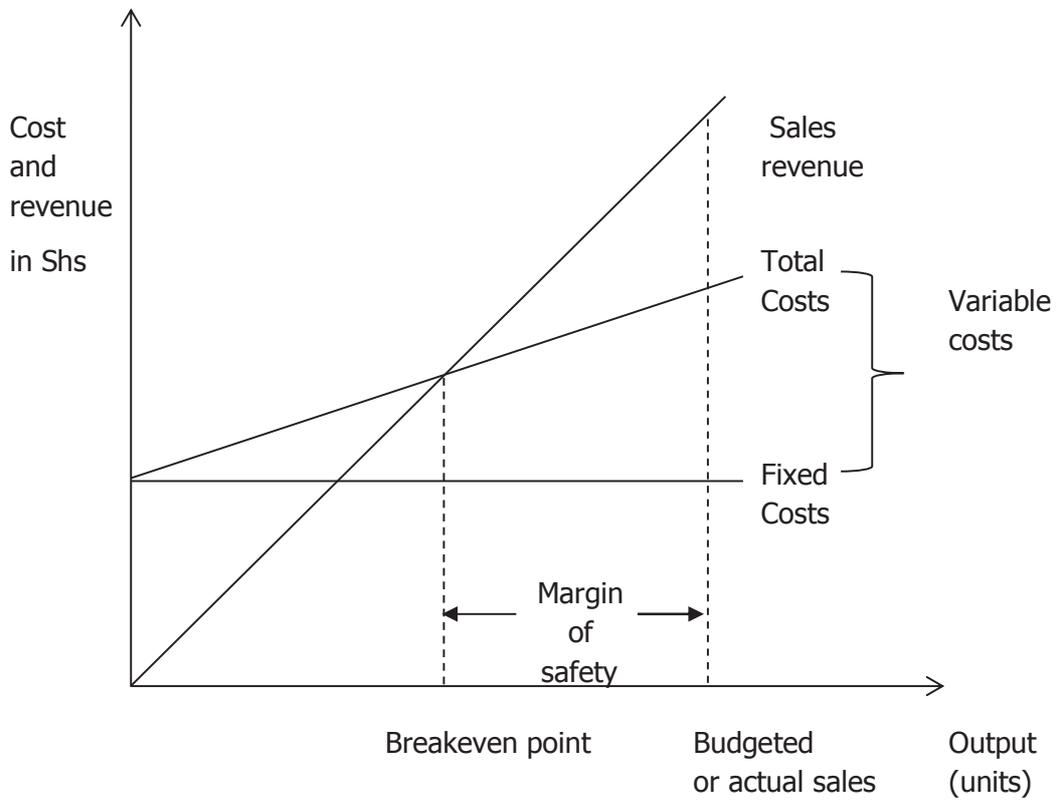
- Starts where the fixed cost line meets the vertical axis
- Ends at the point which represents anticipated sales on the horizontal axis and total costs of anticipated sales on the vertical axis.

The breakeven point is the point of intersection of the sales revenue line and the total costs line.

Margin of safety is the area between the breakeven point and budgeted or actual sales.

Illustration
Breakeven charts and P/V charts

Traditional breakeven charts



Example

The budgeted annual output of a factory is 120,000 units. The fixed overheads amount to Shs4,000,000 and the variable cost per unit is Shs50. The sales price is Shs100 per unit.

Required;

Construct a breakeven chart showing the current breakeven point and profit earned up to the present maximum capacity.

Solution;

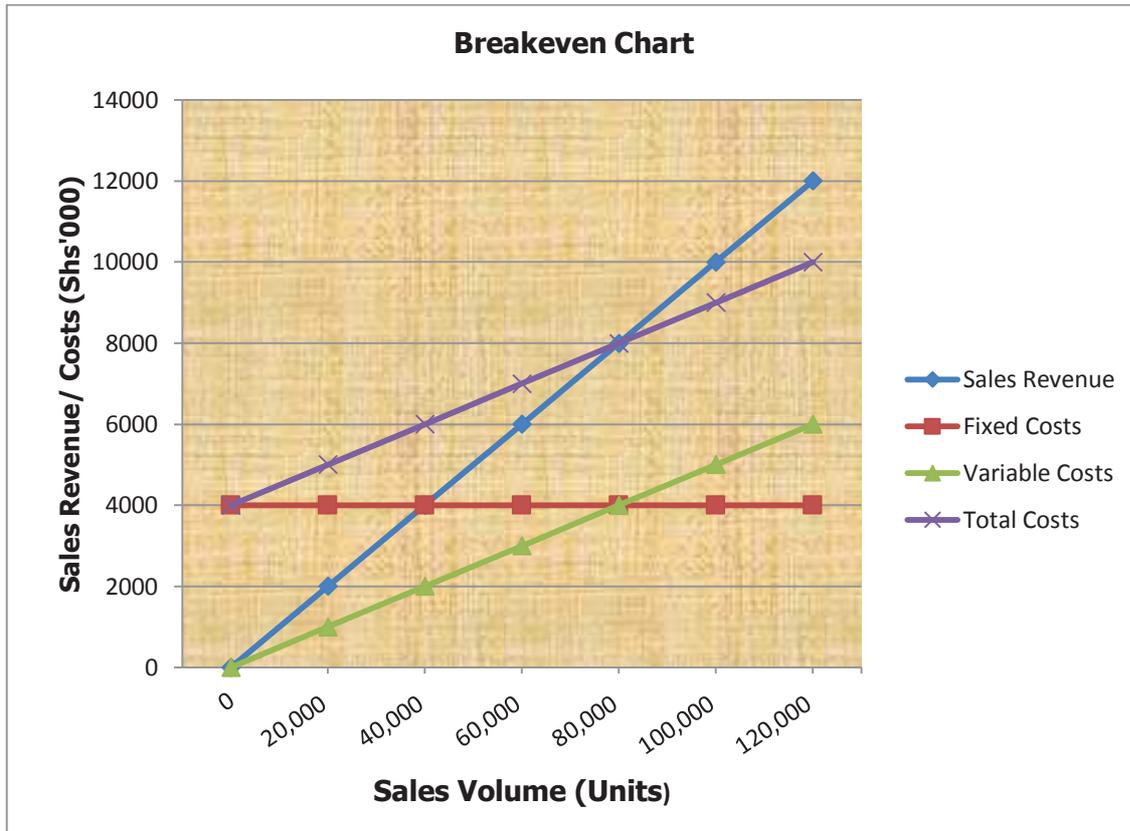
Step 1 – Construct a table of points at two different levels of output

Sales Volume	Sales Revenue	Fixed Costs	Variable Costs	Total Costs
(units)	(Shs'000)	(Shs'000)	(shs'000)	(Shs'000)
0	0	4,000	0	4,000
20,000	2,000	4,000	1,000	5,000
40,000	4,000	4,000	2,000	6,000
60,000	6,000	4,000	3,000	7,000
80,000	8,000	4,000	4,000	8,000
100,000	10,000	4,000	5,000	9,000
120,000	12,000	4,000	6,000	10,000

Step 2 – Plot a breakeven chart and label the horizontal axis with sales volume in units and the vertical axis with sales revenue in shillings.

Steps 3 – Mark any two points on the graph and join them using a rule for the following line

- Sales revenue line
- Fixed cost line
- Variable cost line
- Total cost line



P/V charts

Breakeven charts usually show both costs and revenues over a certain level of activity. They do not highlight directly the amounts of profits or losses at the various levels of activity. However, a P/V chart clearly identifies the net profit or loss at different levels of activity.

Illustration : P/V chart



The chart above shows the amount of net profit or loss at different levels of (Sales) activity. Make sure that you are able to identify the points shown on the graph above in an examination.

LIMITATIONS OF CVP ANALYSIS

Breakeven analysis has a number of limitations which include;

- It assumes fixed costs are to remain constant at all levels of output
- Variable costs are expected to remain constant at all levels of output
- Selling prices are assumed to be constant at all levels of output
- Production and sales are expected to be the same i.e. ignores inventory levels
- Uncertainty involved in estimating fixed costs and variable costs per unit is ignored
- The breakeven chart is time consuming to prepare
- It can only apply to a single product or a single mix of a group of products.



Harvest Training and Consultancy Uganda Ltd.

trainers & bookkeepers

COST & MGT ACCOUNTING - PAPER 7

UNIT 10 - Relevant & Irrelevant Costs



10.0

RELEVANT & IRRELEVANT COSTS

UNIT 10 OVERVIEW:

- Key Definition
- Definition and meaning of relevance
- Importance of qualitative factors in decision making
- Relevance cost of materials
- Relevance cost of Labour
- Relevance cost of Overheads

1.1 INTRODUCTION

- Firms are continuously seeking for alternative courses of action to address numerous organisational challenges and make appropriate decisions. Because of the availability of various alternatives that can be used to address the problems facing the organization, managers are always forced to choose between these alternative courses of action.
- The aim of this unit is to bring out the various techniques that can be employed by management in decision making function to ensure that the best alternative that will add value to the organization is selected and implemented.
- Decision-making involves the process of evaluating two or more alternative courses of action leading to a final best choice. Decision-making is closely associated with planning for the future and is directed towards a specific objective or goal.
- Decision-making is a fundamental exercise of management in the managerial process. It is concerned with the future and involves a choice between alternative courses of action. Successful decision-making consists of the following steps:
 1. *Problem identification*
 2. *Identification of objectives*
 3. *Search for alternative courses of action*
 4. *Gathering data about the alternatives*
 5. *Evaluation and selection of a course of action*
 6. *Implementing the decision*
 7. *Monitor the results to ensure the desired results are achieved.*

1.2 RELEVANT COST FOR DECISION MAKING

1.2.1 Key definitions

- **A relevant cost** is a future cash flow arising as a direct consequence of a decision. It is therefore a future cash flow that will differ between the various alternatives being considered. Relevant costing therefore examines both additional costs and additional revenues likely to result from each degree of change.

- **Relevant cost analysis** is the process of estimating the consequences of alternative actions that the decision maker may take. In each of these decisions, the financial implications of each alternative have to be weighed upon. Each decision requires the comparison of one or more proposed alternatives with the status quo.

1.2.2 Features of Relevant Costs

Specifically, fundamental features of relevant cost include the following;

- **Is a cash flow:** Only cash flow information is required for decision-making. Items such as depreciation, bad debts, and notional costs should be excluded.
 - **Is a future cost:** Only future costs are relevant for decision-making. These are forward looking based on expected factor prices for the planning period. Costs that have been incurred i.e. past costs, Sunk costs and committed costs are irrelevant for decision-making.
 - **Differential cost/revenue:** Only costs which differ among decision alternatives are relevant to a decision. They are different under one set of conditions than they would be under another set of conditions. The two elements or criteria of costs that differ among alternatives are
 - (a) incremental costs and
 - (b) Opportunity costs.
- (a) Opportunity cost:** An opportunity cost is a benefit foregone by choosing one option instead of the next best alternative. These represent the maximum income or benefits lost from not choosing the next best alternative.
- (b) Incremental costs:** In effect, differential costs are incremental costs. These are avoidable or escapable costs which are incurred only when the activity is extended beyond its present range. These could also be regarded as the difference in total costs resulting from a contemplated change. In effect, variable costs are incremental costs unless additional business also involves additional fixed costs outlay.

1.2.3 Fixed and variable costs

- **Variable costs will be relevant costs**
 - a) Directly attributable costs are those costs, although fixed within a relevant range of activity level are relevant to a decision for either of the following reasons.
 - i. They could increase if certain extra activities were undertaken e.g. it may be necessary to employ an extra supervisor if a particular order is accepted. The extra salary would be an attributable fixed cost.
 - ii. They would decrease or be eliminated entirely if a decision were taken either to reduce the scale of operations or shut down entirely.
- **Fixed costs are irrelevant to a decision**
 - b) General fixed overheads are those overheads which will be unaffected by decisions to increase or decrease the scale of operations. They are usually apportioned costs and are not relevant in decision making.
- **Absorbed overheads are notional (estimated/hypothetical) accounting costs and hence irrelevant.**

In summary;

Costs are relevant if:

- i. They are future costs
- ii. They are incremental/avoidable
- iii. They arise out of cash flow
- iv. They are variable and directly attributable fixed costs

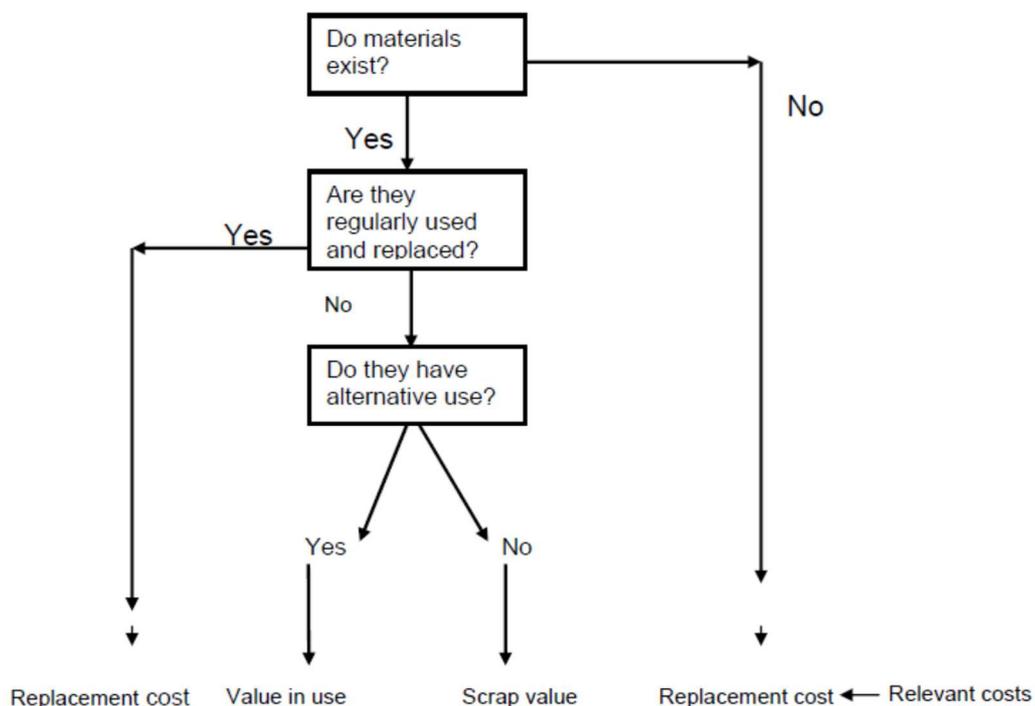
Costs are irrelevant if:

- i. They are sunk/historical costs
- ii. They are committed costs
- iii. They are hypothetical accounting costs e.g. depreciation.
- iv. They are general fixed costs

1.3 IDENTIFYING RELEVANT COSTS

1.3.1 MATERIALS

The relevant cost for materials rotates around the principle that once materials exist, it is because they are regularly used or have alternative use. Otherwise they should be scrapped – see figure below.



- The relevant cost of materials is generally their current replacement or purchase cost unless the materials have already been purchased and will be replaced once used.
- If the materials have already been purchased but will not be replaced, then the relevant cost of using them is either, (a) their current resale value, (b) the value they could obtain if they were put to the alternative use, if this is greater than their current resale value. The higher of (a) or (b) is then the opportunity cost of the materials.

Illustration1

Assume there is job B to be done. The company has materials worth UGX4,500,000 in the store.

Alternative 1: The Company can resale all the materials at UGX2,400,000.

Alternative 2: If not used on another job E this would have cost UGX2,800,000.

In alternative1 above the UGX4,500,000 is a sunk cost and is irrelevant to decision making. On the other hand, the opportunity cost of using materials on job is UGX2,400,000.

In alternative 2 above, the opportunity cost of using materials will be UGX2,800,000.

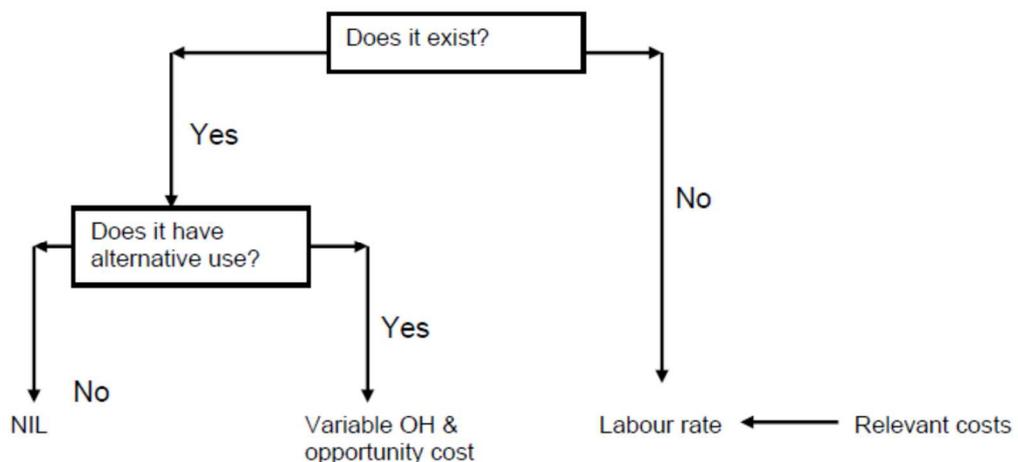
In the above case, since alternative 2 provides a higher saving that will be foregone if materials were used on job B, it represents a relevant cost.

Therefore,

1. Where the materials are in continuous use, the relevant cost is the future replacement cost.
2. Where the materials are not in continuous use, the relevant cost is the higher of the salvage value and the value for the alternative use.
3. However, if the materials had no resale value and no other possible use, then the relevant cost of using them for the option or opportunity under consideration would be zero.

1.3.2 LABOUR

- The relevant cost of labour is the replacement cost or the incremental cost or the hiring cost or all the above.
- However if the order under consideration necessitates the transfer of employees who are fully occupied on the existing job, and yet making a contribution, if affected, the company will register the loss on contribution. This lost contribution is always a relevant cost in decision-making (Opportunity cost).



1.3.3 OVERHEAD COSTS

- Only directly attributable overheads are relevant for decision-making, any non-cash overheads, fixed overheads and general overheads are irrelevant. General overheads refer to headquarters overheads charged to jobs.

Activity 1

Jomayi (U) Ltd deals in construction of houses to its clients. During the year 2014, the company got an order from Deal Enterprises for a house to be constructed around Muyenga Hill at a contract price of UGX45,000,000. In January 2015, when the company had done 40% of the work, it got information that Deal enterprises had gone into liquidation and there is no prospect that any money will be obtained from the winding up of the company.

Jomayi (U) Ltd had already spent UGX8,000,000 on the house and progress payments of UGX10,000,000 had been received from the customer (Deal) prior to liquidation.

Kazinda has however offered to purchase the same house at UGX28,000,000 once it is completed. Jomayi realized that to complete the house, the following costs will be incurred:-

Materials: These have been bought at cost of UGX6,000,000. They have no other use and if the house is not completed, they will be sold for scrap at 2,000,000. Additional materials needed will cost UGX4,000,000.

Labour costs: The Management of Jomayi established that more workers will be hired at a total cost of UGX2,000,000 if the house is to be completed. Besides this, employees who are permanently employed their wage bill will increase by UGX2,500,000.

Labour is in short supply and if the house is not complete, the workforce will be switched to another job and will earn UGX3,000,000 in revenue and incur UGX1,200,000. If the work is not completed, Jomayi Ltd will pay subcontract fees amounting to UGX1,100,000 otherwise the fees will amount to UGX3,300,000.

Required:

Assess whether the new customers offer should be accepted and bring out the reasons for inclusion of any costs.

1.4 SHORT TIME DECISIONS

The short-run decisions include:-

- (a) *Make or buy decision*
- (b) *Operate or shut down decision*
- (c) *Product mix under limiting factor decisions*
- (d) *Accept or reject special order decisions*
- (e) *Sell or process further decision*

1.4.1 MAKE OR BUY DECISION.

Management sometimes may have to make a choice between manufacturing the component parts of the product or buying them from outside. Such a situation of make or buy decision may arise whenever the firm has the idle plant capacity and the technical capability of manufacturing the component parts. The economics of the two alternatives is examined on the basis of differential cost analysis.

The Make decision

Here, the firm has idle plant capacity (i.e. a machine is underutilized) and the technical capability of manufacturing the component part. To arrive at the make decision, the management of the firm should evaluate the costs associated with making the component part. These include;

- (i) *Differential variable costs of materials*
- (ii) *Differential variable costs of labour*
- (iii) *Differential variable overhead costs*
- (iv) *Specific and any additional fixed costs (where applicable)*
- (v) *The opportunity costs of suspending the production of existing products.*

The Buy decision

Here, the firm has no spare capacity i.e. the machine is fully busy and the manufacture of the component part will require the withdrawal or suspending the production of existing products. In such a case, to arrive at the buy decision, management of the firm should evaluate the costs associated with the buy decision.

These include;

- (i) *The purchase price,*
- (ii) *Transportation costs,*
- (iii) *Insurance costs and*
- (iv) *Ordering costs*

Irrelevant costs in the Make or buy decision

These are costs that cannot be relevant to the make or buy decision and include;

- a. Allocated fixed costs that remain unchanged in total when components are produced.
 - b. The costs that will be incurred under both the buy and make alternatives.
- However, if the spare capacity that will be created in case the components are to be purchased can be utilized in the most effective way, the amount realized from that spare capacity is relevant to decision-making.

Qualitative factors / Non-financial factors which influence the Make or buy decision

- (i) The quality of the components supplied when the buy decision is taken,
- (ii) The delivery time (Lead time). The possibilities of delays by the supplier should be considered,
- (iii) The morale of the existing workers especially those whose earnings are affected by the buy/make decision.
- (iv) The reliability of the prospective suppliers.
- (v) The financial and technical capacity of the prospective suppliers.

Activity 2

BMK (U) Ltd manufactures 1,000 components used to make the final product and the cost structure is as below.

	Cost per unit (UGX)
Direct material	2
Direct labor	6
Variable	3
Fixed over heads	4
Total	15

Debo who is outside supplier is offering to sell the component to BMK for shs16 each.

The labour force is in short supply and existing labour force is fully occupied. To produce the component the company will have to divert 2 workers who are currently producing product A and each worker currently contributes shs4 per unit if each component is to be produced. These 2 workers are part of the permanent staff but each workers salary will increase by shs1 for every component produced.

All the materials to make the required components are already in the warehouse and have no alternative use at all. The materials were purchased at a cost of shs 2 per unit.

If the components are to be manufactured, the purchasing manager's salary will decrease by shs2 for every component manufactured though the supervisor's salary will increase by shs3 per unit made.

For every component manufactured or purchased, quality test will be carried out at rate of shs3 per unit

Required:

- (i) Advise the firm whether the component should be manufactured or purchased or whether the offer should be accepted.
- (ii) Other than the cost criterion, what qualitative factors are likely to affect the decision made

1.4.2 OPERATE OR SHUT-DOWN DECISIONS

- Where the organization operates several production lines, one or more of these lines may appear to be unprofitable hence perpetuating management to reach a shut down or delete decision. Differential cost analysis is used when the firm or business is faced with the possibility of temporary shutdown.
- The type of analysis has to determine whether in the short-run a firm is better off operating than not operating. Before the decision of shut down is taken, its impact on overall profits must be assessed.
- As long as production line recovers all the variable costs and make a contribution towards the recovery of fixed costs, it may be preferable to operate and not to shut down.
- If the profits rise due to shutting down, then shut down otherwise maintain the production line. However, management should consider the investment in the training of its employees which would be lost in the event of a temporary shutdown.
- Another factor is the loss of established markets for the products the company has been selling. The danger of obsolescence of the plant cannot be ignored.

Activity 3

JESA (U) Ltd manufactures three dairy products, Ghee, Ice and Butter. JESA's Income statement for the period ending 31 December 2014 is presented below.

	Ghee (UGX)	ICE (UGX)	Butter (UGX)	TOTAL (UGX)
Sales	150,000	180,000	160,000	490,000
Variable costs	90,000	172,000	110,000	372,000
contribution	60,000	8,000	50,000	118,000
Fixed costs	17,000	18,000	20,000	55,000
P&L	43,000	(10,000)	30,000	63,000

The company is concerned about its poor profit performance and is considering whether or not to cease selling Ice. It is felt that selling prices cannot be raised or lowered.

If the production of ice is suspended shs6,000 of fixed will be avoided because the cost is directly related to ice production. Assume that ice cannot be substituted by any other product and that investment in assets cannot be reduced if this product is dropped. All other fixed costs are considered to remain the same.

Required:

Advise on the shutdown of ice and make any reservations.

1.4.3 PRODUCT MIX DECISION UNDER LIMITING (KEY) FACTOR.

When a company manufactures more than one product, a problem is faced by the management as to which product mix (*product composition*) will give the maximum profits. If there is demand for all the products that can be produced, the company may at times find it difficult to meet the needs of the customers especially if demand is in excess of its productive capacity.

The level output of the company may be restricted by shortage of resources known as limiting factors.

Key Term

A limiting factor is an element that restricts the output and the profit potential earning capacity of the firm. Limiting factors could be shortage of labor, materials, equipment or factory space. To make matters worse, within a short time it is unlikely that these production constraints can be removed and additional resource acquired.

Where the limiting factors apply, profit can be maximized when the greatest possible contribution to profit is obtained each time the scarce or limiting factor is used.

The contribution approach to limiting factors:-

In making the product mix decision, the following steps are followed:-

Step 1: Determine the contribution per product (i.e. Unit selling price-Variable cost)

Step 2: Determine contribution per limiting factor. This gives the measure of profitability for a unit of a limiting factor. This can be calculated by using the formula below;

$$\text{Contribution per limiting factor} = \frac{\text{Unit contribution (Unit selling price - Variable cost)}}{\text{Units of scarce resource to make complete unit}}$$

Step 3: Rank the products by contribution per limiting factor by assigning one to the product with highest contribution per limiting factor and in that order.

Step 4: Produce to full satisfaction of each product following the ranking order until the limiting factors units are used up.

Activity 4

A company produces three products and is reviewing the production and sales budgets for the next accounting period. The following information is available for the three products

	Oranges	Passion Fruits	Apples
Unit selling price	200	150	800
Variable cost per unit	140	70	600
Fertilizers per unit (Kgs)	$\frac{1}{4}$	$\frac{1}{2}$	2
Estimated sales demand	500 units	1,000 units	600 units

Amount of fertilizers is limited to 1,700 kilograms for the period and is insufficient to meet total sales demand.

Required:

- (i) Determine the product mix a company can produce and sell in order to maximize returns during the period.
- (ii) Total contribution to be gained and lost because of the optimum mix selected

1.4.4 SPECIAL ORDER DECISION:

Special order decisions involve determining whether or not a special order from a customer outside the normal customer base should be accepted. The order usually involves an offer at a price less than the normal selling price.

From a business perspective, customers often approach a company and ask to buy a specified quantity of product at a specified price. Sometimes the customer will request modifications to the product as well, such as a special logo. This type of decision is usually a one-time order that will not impact the supplier's regular sales.

Before considered a special order, the company must have **idle capacity**, i.e., it should have the ability to complete the special order without expanding its operations. In other words, it must have resources that can be used to fulfill the order.

The special-order decision is based on the difference between **incremental revenue** and the **incremental costs**.

3.8.1 Incremental analysis components

Short-term management decisions such as special orders are best performed when based on an **incremental analysis**. While decisions can be made by examining side-by-side income statements and identifying the differences, incremental analysis is the straightest forward, the shortest, and the easiest approach. Incremental analysis enables managers to focus on the relevant parts of a decision. A manager that prepares side-by-side income statements wastes a lot of time capturing and listing costs that are not relevant as they will not impact the decision at hand.

- **Incremental Revenue**

Incremental revenues are the additional revenues generated from accepting the special order. The revenue can result from additional sales of products or from providing services. If the company is operating at less than capacity, revenue of regular customers will not be affected. If the company is operating at capacity, it will have to give up some regular sales in order to provide the special order.

- **Incremental Costs**

Incremental costs are the additional costs incurred from accepting a special order. Variable product costs are always incremental and cause profits to decline. Variable operating costs include selling costs such as commissions and shipping costs are relevant as well. Cost savings do not exist in special order decisions.

3.8.2 Amounts that are not relevant in special order decisions

Costs that will be incurred regardless if a special order decision is accepted or not are not relevant for special order decisions. Most often, a company's recurring fixed costs will remain the same in total if a special order is accepted.

Occasionally the acceptance of a special order may cause additional fixed costs. In these cases, these additional fixed costs are relevant and should be considered in an incremental analysis. Sunk costs are not relevant with any special order decision process.

3.8.3 Evaluating special order decisions

Special order decisions should be generally be accepted if the order is expected to increase profit. The following steps can be used in determining whether a special order should be accepted or rejected;

Step 1: - Determine whether the entity has any spare capacity to take up the special order.

Step 2: - Determine the incremental revenue from accepting the special order

Step 3: - Determine the incremental variable costs by considering the following factors of production;

Incremental costs:	Shs
Direct materials	xx
Direct labour	xx
Variable overheads	<u>xx</u>
Total relevant cost to take on special order	xx

Step 4: - Determine the incremental increase or decrease in profit if the special order is accepted by comparing the incremental revenue obtained in step 2 and the incremental variable costs obtained in step 3 above as follows;

	Shs
Incremental revenue	XX
Less: Incremental costs	<u>XX</u>
Increase in profit if the order is accepted	<u>XX</u>

3.8.4 Accept or Reject?

If incremental revenues **are less than** incremental costs, reject the special order unless qualitative characteristics overwhelmingly impact the decision.

If incremental revenues **are greater than** incremental costs, accept the special order unless qualitative characteristics overwhelmingly impact the decision.

If incremental revenues **are equal to** incremental costs, focus primarily on qualitative characteristics to evaluate the decision.

3.8.5 Qualitative factors to consider under special order decisions

Qualitative factors are non-monetary considerations a decision maker should put in mind before accepting the special order. These include;

- Possibility of getting repetitive business from the customer that has placed the special order.
- Customer loyalty issues from existing customers and how the special order may affect them.
- The need to associate with the specific events that the special order is being placed / produced for.
- The brand equity of the company products.
- The cost of employee redundancy during the current production capacity.
- The reliability of the sources/ suppliers and the quality of raw materials before accepting the order.

Activity 5

QPL Ltd manufactures medals for winners of athletic events and other contests. Its manufacturing plant has the capacity to produce 10,000 medals each month. Current production and sales are 7,500 medals per month in batches of 50. The company normally charges Shs. 15,000 per medal. Cost information for the current activity level is as follows:

Variable costs per batch	Shs
Direct materials	175,000
Direct manufacturing labour	200,000
Other variable costs	50,000
Fixed manufacturing costs	27,500,000
Fixed marketing costs	17,500,000

QPL has just received a special onetime order for 2,500 medals at Shs 10,000 per medal. Accepting the order would not affect the company's regular business. The special order requires the company to make the medals in batches of 100.

Required:

- Advise QPL whether it should accept this special order.
- Identify **three** non-monetary considerations the company should consider before accepting the special order.

REVISION QUESTIONS

QUESTION 1 MUKONO CONSTRUCTION Co

Mukono Construction Company Uganda (MCCU) has been asked to quote a price for a one-off contract for the repair of a hotel block in Mukono town. The company's management accountant has asked you for advice on the relevant costs for the contract. The following information is available:

Materials

The contract requires 5,000 bags of cement which is a material used regularly by MBU in other construction works. The company has 4,000 bags of cement currently in inventory which were purchased last month for a total cost of shs. 80 million. Since then, the price per bag of cement has increased by 10%.

The construction works also require 300 cans of paint. There are 350 cans of paint in inventory which are not required for normal construction works. These cans of paint originally cost a total of shs. 17.5 million. If not used on this contract, the inventory would be sold for shs. 4,350 per can of paint.

Labour

The contract requires 750 hours of skilled labour. Skilled labour is paid shs. 6,500 per hour. There is a shortage of skilled labour for this kind of job and all the available labour is fully employed in the company in the production of concrete blocks sold commercially within and outside Mukono town. The following information relates to the production of concrete blocks;

	<i>Shs per unit</i>
Selling price	100,000
Skilled labour	26,000
Other overheads	14,000

Required;

Using the principles of relevant cost analysis, advise the management accountant the total relevant cost of executing the one-off contract above.

QUESTION 2 THE TELEPHONE Co

The Telephone Co (T Co) is a company specialising in the provision of telephone systems for commercial clients. There are two parts to the business:

- installing telephone systems in businesses, either first time installations or replacement installations;
- supporting the telephone systems with annually renewable maintenance contracts.

T Co has been approached by a potential customer, Push Co, who wants to install a telephone system in new offices it is opening. Whilst the job is not a particularly large one, T Co is hopeful of future business in the form of replacement systems and support contracts for Push Co. T Co is therefore keen to quote a competitive price for the job. The following information should be considered:

- (a) One of the company's salesmen has already been to visit Push Co, to give them a demonstration of the new system, together with a complimentary lunch, the costs of which totalled shs400,000.
- (b) The installation is expected to take one week to complete and would require three engineers, each of whom is paid a monthly salary of shs4 million. The engineers have just had their annually renewable contract renewed with T Co. One of the three engineers has spare capacity to complete the work, but the other two

would have to be moved from contract X in order to complete this one. Contract X generates a contribution of shs5,000 per engineer hour.

There are no other engineers available to continue with Contract X if these two engineers are taken off the job. It would mean that T Co would miss its contractual completion deadline on Contract X by one week. As a result, T Co would have to pay a one-off penalty of shs500,000. Since there is no other work scheduled for their engineers in one week's time, it will not be a problem for them to complete Contract X at this point.

- (c) T Co's technical advisor would also need to dedicate eight hours of his time to the job. He is working at full capacity, so he would have to work overtime in order to do this. He is paid an hourly rate of shs40,000 and is paid for all overtime at a premium of 50% above his usual hourly rate.
- (d) Two visits would need to be made by the site inspector to approve the completed work. He is an independent contractor who is not employed by T Co, and charges Push Co directly for the work. His cost is shs20,000 for each visit made.
- (e) T Co's system trainer would need to spend one day at Push Co delivering training. He is paid a monthly salary of shs1.5 million but also receives commission of shs120,000 for each day spent delivering training at a client's site.
- (f) 120 telephone handsets would need to be supplied to Push Co. The current cost of these is shs18,200 each, although T Co already has 80 handsets in inventory. These were bought at a price of shs16,800 each. The handsets are the most popular model on the market and frequently requested by T Co's customers.
- (g) Push Co would also need a computerised control system called 'Swipe 2'. The current market price of Swipe 2 is shs10.8 million, although T Co has an older version of the system, 'Swipe 1', in inventory, which could be modified at a cost of shs4.6 million. T Co paid shs5.4 million for Swipe 1 when it ordered it in error two months ago and has no other use for it. The current market price of Swipe 1 is shs5,450,000, although if T Co tried to sell the one they have, it would be deemed to be 'used' and therefore only worth shs3 million.
- (h) 1,000 metres of cable would be required to wire up the system. The cable is used frequently by T Co and it has 200 metres in inventory, which cost shs1,200 per metre. The current market price for the cable is shs1,300 per metre.

NB: Assume that there are four weeks in each month and that the standard working week is 40 hours long.

Required:

- (a) Prepare a cost statement, using relevant costing principles, showing the minimum cost that T Co should charge for the contract. Make DETAILED notes showing how each cost has been arrived at and EXPLAINING why each of the costs above has been included or excluded from your cost statement.
- (b) Explain the relevant costing principles used in part (a) and explain the implications of the minimum price that has been calculated in relation to the final price agreed with Push Co.

QUESTION 3 RUBBER Co

Robber Co Manufactures control panels for burglar alarms, a very profitable product. Every product comes with a one year warranty offering free repairs if any faults arise in this period. It currently produces and sells 80,000 units per annum, with production of them being restricted by the short supply of labour. Each control panel includes two main components – one key pad and one display screen. At present, Robber Co manufactures both of these components in-house. However, the company is currently considering outsourcing the production of keypads and or display screens. A newly established company based in Burgistan is keen to secure a place in the market, and has offered to supply the key pads for the equivalent of UGX410 per unit and the display screens for the equivalent of UGX430 per unit. The price has been guaranteed to two years. The current total annual costs of producing the keypads and the display screens are:



	Keypads 80,000 units UGX"000"	Display screens 80,000 units UGX"000"
Production		
Direct materials	160	116
Direct labour	40	60
Heat and power costs	64	88
Machine costs	26	30
Depreciation and insurance costs	<u>84</u>	<u>96</u>
Total annual production costs	<u>374</u>	<u>390</u>

Additional Information

- (i) Materials costs for keypads are expected to increase by 5% in six month's time, materials costs for display screens are only expected to increase by 2% but with immediate effect.
- (ii) Direct labour costs are purely variable and not expected to change over the next year.
- (iii) Heat and power costs include an apportionment of the general factory overhead of heat and power as well as the costs of heat and power directly used for the production of keypads and display screens. The general apportionment included is calculated using 50% of the direct labour cost for each component and would be incurred irrespective of whether the components are manufactured in-house or not.
- (iv) Machine costs are semi-variable; the variable element relates to set up costs, which are based upon the number of batches made. The keypads' machine has fixed costs of UGX4,000 per annum and the display screens' machine has fixed costs of UGX6,000 per annum. Whilst both components are currently made in batches of 500, this would need to change, with immediate effect, to batches of 400.
- (v) 60% of depreciation and insurance costs relate to an apportionment of the general factory depreciation and insurance costs; the remaining 40% is specific to the manufacture of keypads and display screens.

Required

Advise Robber Co whether it should continue to manufacture the keypads and display screens in-house or whether it should outsource their manufacture to the supplier in Burgistan, assuming it continues to adopt the policy to limit manufacture and sales to 80,000 control panels in the coming year.

QUESTION 4 ABACUS Ltd

Abacus Ltd makes four components W, X, Y and Z of a product with the following information:

Component	W	X	Y	Z
Units	1,000	2,000	4,000	3,000
	Shs "000"	Shs "000"	Shs "000"	Shs "000"
Unit Variable costs:				
Direct Labour	4	5	2	4
Direct materials	8	9	4	6
Variable overhead	<u>2</u>	<u>3</u>	<u>1</u>	<u>2</u>
	14	17	7	12
Fixed costs	1,000	5,000	6,000	8,000

External sub-contractors have offered to make the above components for the following prices per unit:

Component	W	X	Y	Z
Sub-contractor prices (Shs "000")	12	21	10	14

Required

Advise the company whether it should make or buy the components.

(12 marks)

QUESTION 5 PTN Ltd

PTN Ltd manufactures and sells two products X and Y. At an operating capacity of 75%, PTN Ltd produces and sells 80,000 units of product X and 50,000 units of product Y. The unit cost structure of PTN Ltd is as follows:

	Product X Shs '000'	Product Y Shs '000'
Direct materials	40	80
Direct labour	80	80
Factory overhead (35% fixed)	90	60
Administration and selling overhead (65% fixed)	120	90

PTN Ltd sells each unit of product X at Shs 450,000 and that of product Y at Shs 380,000.

The company has received offers from Rwanda and Burundi to supply products X and Y respectively. Rwanda is offering to purchase product X at Shs 300,000 per unit, while Burundi is offering Shs 280,000 per unit for product Y. The offers will result in an additional packaging cost of Shs 9,000 per unit.

PTN Ltd absorbs factory overheads on the basis of machine hours, and the hourly rate at the 75% capacity is Shs 40,000 per hour. The company can accept either offer by utilizing the 25% of its idle capacity.

Required:

- (a) Calculate the surplus machine hours available if PTN Ltd is to take up either of the offers.
- (b) Compute PTN Ltd's fixed costs.
- (c) Using relevant calculations, advise the management of PTN Ltd as to which offer they should take up.
- (d) Using your answer in (c) above, compute the number of units that can be produced with the surplus machine hours.
- (e) Prepare a statement showing the overall profitability of PTN Ltd after incorporating the offer suggested in (c) above.

QUESTION 6 KAMA TRADING Ltd

Kama Trading Limited operating at 80% production capacity produces and sells two products M and N. The cost sheets of these products are as follows.

	Product	
	M	N
Units produced and sold	600	400
Costs/ selling price per unit:	Shs '000'	Shs '000'
Direct materials	5	10
Direct labour	10	10
Factory overheads (40% fixed)	20	15
Administrative & selling overheads (60% fixed)	20	12.5
Total	55	47.5
Selling price	85	65.0

All factory overheads are absorbed on the basis of machine hours, which are the limiting factor. The machine hour rate is Shs 5,000 per hour. The company has now received an offer from Rato Ltd for the purchase of product M at Shs 60,000 per unit and another from Kintu Ltd for the purchase of product N at Shs 50,000 per unit. In both cases a special packing charge of Shs 1,250 per unit has to be incurred by KTL.

KTL can accept either of the two offers by utilizing the balance of 20% of the capacity.

Required:

- (a) Advise KTL as to which proposal should be accepted.



- (b) Prepare an overall profitability statement for KTL after incorporating the proposal in (a) above.
 (c) Giving at least one example in each case, distinguish between relevant costs and irrelevant costs.

QUESTION 7 YWEES (U) Ltd

YWEES (U) Ltd manufactures three types of toothpaste: Sira, Vaco and Mebo. The following is the company's income statement for the period ending 31 October 2015:

	Sira Shs '000'	Vaco Shs '000'	Mebo Shs '000'	Total Shs '000'
Sales	75,000	90,000	80,000	245,000
Variable costs	(45,000)	(86,000)	(55,000)	(186,000)
Contribution	30,000	4,000	25,000	59,000
Fixed costs	(8,500)	(9,000)	(10,000)	(27,500)
Profit / (loss)	21,500	(5,000)	15,000	31,500

The company is concerned about its poor performance and is considering whether or not to cease selling Vaco. It is felt that selling prices cannot be raised or lowered. If the production of Vaco is suspended, Shs 3 million of fixed costs will be avoided because the cost is directly related to Vaco production. Assume that Vaco cannot be substituted by any other product and that investment in assets cannot be reduced if this product is dropped.

All other fixed costs are constant.

Required:

- (i) Advise YWEES (U) Ltd whether it should stop the production of Vaco or not.
 (ii) Identify the steps that should be followed in making a product mix decision in presence of a limiting factor.



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COST & MGT ACCOUNTING - PAPER 7

UNIT 11 - Activity Based Costing



11.0

ACTIVITY BASED COSTING

1.1 INTRODUCTION TO ACTIVITY BASED COSTING SYSTEM (ABC)

1.1.1 Definition of ABC

ABC is a method of costing which involves identifying the costs of the main support activities and the factors that 'drive' the cost of each activity. Support overheads are charged to products by absorbing costs on the basis of the product's usage of the factor driving the overheads.

- **The Major ideas behind activity based costing are as follows;**
 - (a) Activities cause costs: Activities include ordering, material handling, machining, assembly, production scheduling and dispatching.
 - (b) Manufacturing products creates demand for the support activities.
 - (c) Costs are assigned to a product on the basis of the product's consumption of these activities.
- **Activity** in this case is a distinct business operation, service or action such as ordering for materials, setting up a machine, inspection, making purchases, material handling etc.
- In this case, the underlying assumption of activity based costing is entirely different from that of conventional costing systems. The conventional costing system assumes that products cause costs. Activity based costing systems have activities as fundamental cost objects. Activity based costing systems also assumes that activities cause costs and that cost objects (products) create the demand for activities.
- The underlying foundation of all ABC systems is the perception that an organization is made up activities and they are these activities that cause costs. For instance when you make an order for materials, it is the activity ordering that cause costs and the costs incurred will depend on the number of orders made but not the amount or units of materials involved. Because of this, costs should be apportioned or assigned to products basing on the number of orders (activities) made by each cost center but not the volume obtained by the cost center.
- Hence, ABC emphasizes activities performed by each cost center as a basis of cost allocations as opposed to volume, that is preferred by the traditional approaches. Therefore, with activity perceptive, activities consume resources (hence causing costs) and cost objects (products) consume activities.

1.1.2 The Activity Based Costing System

There are five major steps involved in the ABC system. These include

Step 1: Identify the major activities within the organization that support the manufacture of the organisation's products or the provision of its services.

- This involves support activities that are not directly involved in the physical process of converting materials to finished products or the provision of services. Different types of activities include;

- (i) **Unit level activities.** Activities that are performed each time a unit is produced. It is an activity performed on each individual product or service. These activities consume resources in relation to volume of output e.g. assembling plant. At this level, the cost drivers will be volume-based since the amount of activity will proportionally depend on the number of units produced.
- (ii) **Batch level activities.** Activities that are performed each time a batch of units is produced. Batch level activities assume that inputs are consumed in direct proportions to the number of batches of each product produced regardless of the size of batch such as processing purchase orders, lecturing to class i.e. costs of products change with the number of batches of output. In short, the emphasis is on number of batches regardless of how many units are in a batch. The amount of resource consumed depends on the number of batches run rather than on the number of units in the batch. Purchase orders, machine setup, and quality tests are examples of batch-level activities.
- (iii) **Plant sustenance/facility level.** Activities connected with maintaining the machinery which produces products e.g. costs of upgrading software, machine upgrading. Such costs are not identifiable with a particular product line or product. These costs are either allocated on arbitrary basis or not allocated at all.
- (iv) **Product level activities.** Are those activities that support an entire product line but not necessarily each individual unit. Examples of product-line activities are engineering changes made in the assembly line, product design changes, and warehousing and storage costs for each product line. These could also be activities perform to sustain a product line in the market e.g. beer promotional activities.

Step 2: Use cost allocation and apportionment methods to charge overhead costs to each of these activities.

The costs that accumulate for each activity cost centre is called a **cost pool**.

A cost pool is a point of focus for costs relating to a particular activity in an ABC system. They are links between a pool of costs in an activity center and the product. Therefore, in order to trace the overhead costs to products; appropriate cost drivers should be identified.

Step 3: Identify the factors which determine the size of the costs of an activity / affect the costs of an activity. These are known as cost drivers.

A cost driver is a factor which has an influence on the cost of an activity. Cost drivers are the actual activities that cause the total cost in an activity cost pool to increase. The number of times materials are ordered, the number of production lines in a factory, and the number of shipments made to customers are all examples of activities that impact the costs a company. The appropriate cost driver should always be selected in order to have an appropriate apportionment or distribution of overheads.

Other than identifying the cost drivers, this step also involves the identification of those costs that are specific to each activity that is, those costs which the activity actually causes. All the costs of each activity involved are collected into activity cost pools.

A cost pool is therefore like a cost center or activity center around which costs are accumulated.

Activity Cost Pools

Purchasing department
Receiving Department
Materials Handling
Machine Setup
Inspection

Activity Cost Drivers

Numbers of Purchase Orders
Number of Purchase Orders
Number of Materials Requisitions
Number of Machine Setups Required
Number of Inspections



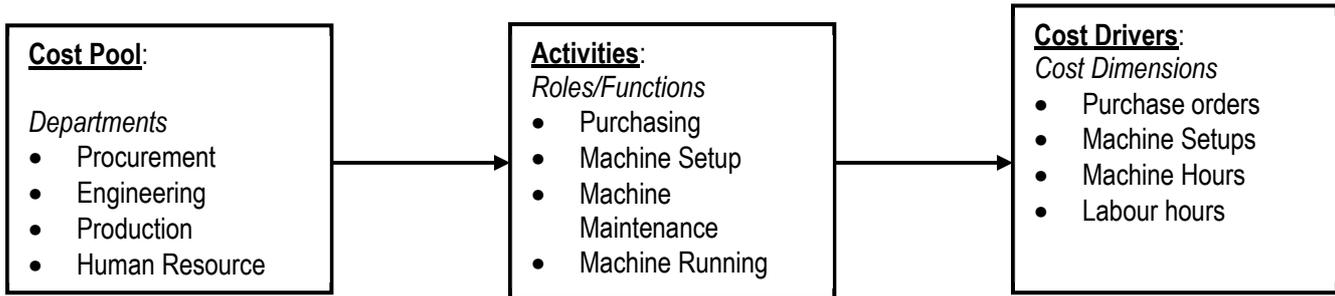
Engineering Department
 Personnel Processing
 Supervisors

Number of Engineering Change Orders
 Number of Employees Hired or Laid Off
 Number of Direct Labour Hours

Step 4: For each cost pool / activity cost centre, calculate an absorption rate per unit of cost driver.

Step 5: Charge overhead costs to products for each activity, on the basis of their usage of the activity (number of cost drivers they use). Overheads are charged by absorbing them into product costs at a rate per unit of cost driver.

Illustration 1: - The ABC System



Activity 1: ABC Vs Conventional absorption costing

Suppose that Mukwano manufactures four products Nomi, Star, Omo, Jick. Output and cost data for the month of January 2020 are as follows;

	Number of units	Machine hours per unit	Direct labour hours per unit	Number of production runs	Material cost per unit
Nomi	10	1	1	2	20,000
Star	10	3	3	2	80,000
Omo	100	1	1	5	20,000
Jick	100	3	3	5	80,000

Additional information

(i) Overhead costs for the period are given as below;

	Shs "000"	Cost Driver
Short-run variable costs	3,080	Machine hours
Set-up costs	10,920	Production runs
Scheduling	9,100	Production runs
Materials handling	7,700	Production runs

(ii) The direct labour cost per hour is Shs. 5,000

Required: Prepare unit costs for each product using;

- (a) Traditional absorption costing (using a direct labour rate to absorb overheads, and
- (b) Activity based costing

1.1.3 Application of activity Based costing (ABC) system

1. **Enables the company to evaluate the viability or profitability of product or customer-** An improved more accurate product cost may enable a company to concentrate on a more profitable mix of products or customers. ABC has been effectively used in identifying customers who are unprofitable to serve. The system therefore is used in carrying out product and customer profitability analysis.
2. **Helps managers in the management of activities-** It helps in identifying value added and non-value added activities or costs so that the non-value added items could be appraised effectively with a view to elimination. As such, it forces managers and supervisors to consider the drivers that affect costs and whether these cost drivers contribute to the final product. Thus, the manager will have better understanding of the economics of production and the economics of the activities performed by the company.
3. **Promotes effective control-** ABC is flexible enough to trace costs to processes, customers, areas of managerial responsibility, as well as products. This promotes effective control through appropriate management of activities.
4. **Enhances budget formulation-** ABC can be used to produce more useful overhead budgets. Activity budgets can be built up by multiplying the planned volumes of each product by the planned quantity of each cost driver consumed and expected cost per unit of cost driver. This is known as activity based budgeting (ABB).
5. **Determination of transfer prices-** Activity based product costs can provide a basis for calculating inter-divisional transfer prices.
6. **Enhances decision making-** ABC provides information that can enhance the process of decision making by more accurately assigning costs to cost objects, such as products, customers and locations.
7. **Helps in setting of selling prices-** It helps fully in fixing of selling prices of products as more correct data of product cost is now readily available.

1.1.4 Merits and Criticisms of ABC

- (a) The **complexity of manufacturing has increased**, with wider product ranges, shorter product life cycles and more complex production processes. **ABC recognizes this complexity with its multiple cost drivers.**
- (b) In a more competitive environment, companies must be able to access product profitability realistically. **ABC facilitates a good understanding of what drives overhead costs.**
- (c) In modern manufacturing systems, overhead functions include a lot of non-factory-floor activities such as product design, quality control, and production planning and customer services. ABC is concerned with all overhead costs and so it can take management accounting beyond its traditional factory floor boundaries.

1.1.5 ABC and decision making

Many of ABC's supporters claim that it can assist with decision making in a number of ways.

- It provides accurate and reliable cost information.
- It establishes a long-run product cost.
- It provides cost data which may be used to evaluate different ways of delivering business.

It is particularly suited to the following types of decision:

- Pricing, where selling prices are derived by adding a profit mark-up to cost.
- Promoting or discontinuing products or parts of the business, since ABC may help management to identify activity costs that may be either incurred or saved.
- Developing new products or new ways to do business, because ABC focuses attention on the support activities that would be required for the new product or business procedure.

Note, however, that an ABC cost is **not a variable cost**. ABC is a form of absorption costing that seeks to charge overheads to products on a more 'fair' basis than traditional absorption costing. An ABC cost is therefore **not a relevant cost** for decision-making purposes.

ABC attempts to **relate the incidence of costs to the level of activities undertaken**. A hierarchy of **activities** has been suggested.

Classification level	Cause of cost	Type of cost	Cost driver
Unit level	Product/acquisition of a single unit of product or delivery of single unit of service	Direct materials Direct labour	Units produced
Batch level	A group of things being made, handled and processed	Purchase ordered Set-ups Inspection	Batches produced
Product level	Development, production or acquisition of different items	Equipment maintenance Product development	Product lines produced
Facility sustaining level	Some costs cannot be related to a particular product line; instead they are related to maintaining the buildings and facilities. These costs cannot be related to cost objects with any degree of accuracy and are often excluded from ABC calculations for this reason.	Building depreciation Organizational advertising	None-supports the overall production or service process

1.1.6 Criticisms of ABC

It has been suggested by critics that activity based costing has some weaknesses

- Cost apportionment may still be required at the cost of pooling stage for shared items of cost such as rent, rates and building depreciation. Apportionment can be an arbitrary way of sharing costs.
- A single cost driver may not explain the cost behavior of all items in a cost pool. An activity may have two or more cost drivers.
- Unless costs are 'driven' by an activity that is measurable in quantitative terms, cost drivers cannot be used. What drives the cost of the annual external audit, for example?
- There must be a reason for using a system of ABC. ABC must provide meaningful product costs or extra information that management will use. If management is not going to use ABC information for any practical purpose, a traditional absorption costing system would be simpler to operate and just as good.
- The cost of implementing and maintaining an ABC system can exceed the benefits of 'improved accuracy' in product costs.
- Implementing ABC is often problematic, due to problems with understanding activities and their costs.
- ABC is an absorption costing system. Absorption costing has only limited value for management accounting purposes.

REVISION QUESTIONS

QUESTION 1 STEEL WORLD LTD

Steel World Ltd (SWL) produces three products: Exotile, Y-angle bar and Z-angle bar. Each uses the same resources, but in different proportions as shown in the table of budgeted data for 2018 below:

Product	Exotile	Y-angle bar	Z-angle bar
Budgeted production (units)	3,000	5,000	8,000
Direct labour hours per unit	2	4	3
Machine hours per unit	3	2	3
Number of Batches	50	100	500
Machine set ups per batch	2	3	1
Purchase orders per batch	4	4	6
Material movements per batch	10	5	4

SWL's budgeted production overhead costs for 2018 are Shs 400 million and current practice is to absorb these costs into product costs using an absorption rate based on direct labour hours.

The management of SWL are considering changing to an activity-based method of attributing overhead costs to products and as a result have identified the following cost drivers and related cost pools:

Cost pool	Shs '000'	Cost driver
Machine maintenance	101,050	Machine hours
Machine set ups	70,200	Machine set ups
Purchasing	90,000	Purchase orders
Material handling	60,000	Material movements

The remaining of overhead costs are mainly labour-related and are to be attributed to products on the basis of labour hours.

Required

Advise the management of Steel World Ltd on the production overhead cost attributed to each product unit using;

- Traditional absorption costing and**
- Activity based costing**

QUESTION 2 VET FARM LTD

Vet Farm Ltd are manufacturers and distributors of veterinary drugs. They currently produce three products using the same machinery/ process. Drugs include Swine Fever Vaccine (SFV) for pigs, Foot and Mouth disease Vaccine (FMV) for cattle and New Castle Vaccine (NCV) for poultry.

Vet Farm Ltd pack the drugs in batches; SFV batch contains 30 units sold at Shs 600,000, FMV batch contains 35 units sold at Shs 350,000, and NCV batch contains 50 units sold at Shs 600,000.

The demand for FMV is growing steadily, yet the company has reached maximum capacity, they have been considering dropping one of the vaccines and concentrate on the two most profitable ones.

Their current monthly production figures are as follows:



Products	SFV	FMV	NCV
Units produced	300	700	2,000
Direct labour cost per unit (shs)	1,000	500	250
Direct Materials cost per unit (Shs)	6,000	3,000	6,000
Number of setups	50	100	400
Number of inspections	200	150	300
Number of material movements	10	7	20
Number of orders	10	20	40

The following additional information on monthly costs is available:

	Shs '000'
Material handling costs	5,000
Machine set up costs	3,000
Inspection costs	1,300
Ordering costs	2,100

Required:

Using activity-based costing (ABC), advise on the decision Vet Farm Ltd wants to take



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COST & MGT ACCOUNTING - PAPER 7

UNIT 12 - Standard Costing



12.0

STANDARD COSTING

UNIT 12 OVERVIEW:

- Standard costs defined
- Use of standard costs
- Deriving Standards.
- Types of Standards
- Budgets Vs Standards
- Flexible Budgets
- The Principle of controllability

1.1 STANDARD COSTS

A standard cost is an estimated unit cost built up of standards of each cost element such as standard labour hours, standard material usage and standard resource price.

1.2 THE STANDARD COST CARD

This is a statement showing how the standard unit cost is built up.

1.2.1 Typical Standard cost card

The standard cost of product 12345 is set out below on a standard cost card

STANDARD COST CARD				
Product: the Splodget No 12345				
	Cost	Requirement	Shs	Shs
Direct materials				
A	Shs 2.00 per kg	6 kgs	12	
B	Shs 3.00 per kg	2 kgs	6	
C	Shs 4.00 per kg	1 litre	4	
Others			2	
				24
Direct labour				
Grade 1	Shs 4.00 per hr	3 hours	12	
Grade 2	Shs 5.40 per hr	5 hours	27	
				39
Variable production overheads	Shs 1. 00 per hr	8 hours	8	
Fixed production overheads	Shs 3.00 per hr	8 hours	24	
Standard full cost of production			95	

From the above, the standard unit cost of shs. 95/= is made up of standard quantities of materials at standard prices, standard quantities of labour time at standard rates amounting to shs. 39 and so on.

The standard cost is therefore determined by management's estimates of the following;

- *The expected prices of materials, labour and expenses*
- *Efficiency levels in the use of materials and labour.*
- *Budgeted overhead costs and budgeted volumes of activity.*

1.3 THE USES OF STANDARD COSTING

Standard costing has two principle uses.

- To value inventories and cost production for cost accounting purposes. It is an alternative method of valuation methods like FIFO and LIFO.
- To act as a control device by establishing standards (expected costs) and comparing the actual costs with the expected costs, thus highlighting areas of the organization which may be out of control.

It can also be used in the following circumstances;

- (a) To assist in setting budgets and evaluating managerial performance.
- (b) To enable the principle of 'management by exception' to be practiced. A standard cost, when established, is an average expected unit cost. Because it is only an average, actual results will vary to some extent above and below the average. Only significant differences between actual and standard should be reported.
- (c) To provide a prediction of future costs to be used in decision-making situations.
- (d) To motivate staff and management by the provision of challenging targets
- (e) To provide guidance on possible ways of improving efficiency

1.4 STANDARD COSTING AS A CONTROL TECHNIQUE

Standard costing involves the establishment of predetermined estimates of the costs of products or services, the collection of actual costs and the comparison of the actual costs with the predetermined estimates. The predetermined costs are known as standard costs and the difference between standard and actual costs is known as a variance. The process by which the total difference between standard and actual results is analyzed is known as **variance analysis**.

1.4.1 Importance of a standard costing system in an organisation

- (i) Carefully planned standards are an aid to more accurate budgeting.
- (ii) Standard costs provide a yardstick against which actual costs can be measured.
- (iii) The setting of standards involves determining the best materials and methods which may lead to economies.
- (iv) A target of efficiency is set for employees to reach and cost consciousness is stimulated.
- (v) Variances can be calculated which enable the principle of management by exception to be operated. Only the variances which exceed acceptable tolerance limits need to be investigated by management with a view of control.
- (vi) Standard costing and variance analysis can provide a way of motivation to managers to achieve better performance.



1.5 DERIVING STANDARDS

The responsibility for deriving standard costs should be between managers able to provide the necessary information about levels of expected efficiency, prices and overhead costs.

1.5.1 Setting standards for material costs

Direct materials cost per unit of raw material will be estimated by the purchasing department from their knowledge of the following

- *Purchase contracts already agreed*
- *Pricing discussions with regular suppliers*
- *The forecast movement of prices in the market*
- *The availability of bulk purchase discounts*
- *The quality of material required by the production departments*

The standard cost ought to include an allowance for **bulk purchase discounts**, if these are available on all or some of the purchases, and it may have to be a weighted average price of the differing prices charged for the same product by alternative suppliers.

A decision must also be taken as to how to deal with price **inflation**. Standard costing is more **difficult in times of inflation but it is still worthwhile since**.

- *Usage and efficiency variances will still be meaningful*
- *Inflation is measurable: there is no reason why its effects cannot be removed*
- *Standard cost can be revised, so long as this is not done too frequently.*

1.5.2 Setting standards for labour costs

Direct labour rates per hour will be set by reference to the payroll and to any agreements on pay rises with trade union representatives of the employees. A separate hourly rate or weekly wage will be set for each different labour grade/type of employee and an average hourly rate will be applied for each grade (even though individual rates of pay may vary according to age and experience). Similar problems to those which arise when setting material standards in times of high inflation can be met when setting labour standards.

1.5.3 Setting standards for material usage and labour efficiency

To estimate the materials required to make each product (material usage) and also the labour hours required (labour efficiency), technical specifications must be prepared for each product by production experts (either in the production department or the work study department).

1.5.4 Setting standards for overheads

When standard costs are fully absorbed costs (standard costs can be used in both marginal and absorption costing systems), the absorption rate of fixed production overheads will be predetermined and based on budgeted fixed production overhead and planned production volume.

Production volume will depend on two factors

- (a) **Production capacity** (or '**volume capacity**') measured perhaps in standard hours of output (a standard hour being the amount of work achievable at standard efficiency levels in an hour), which in turn reflects direct production labour hours.
- (b) **Efficiency of working**, by labour or machines, allowing for rest time and contingency allowances.

1.5.5 Setting standards for sales price and margin

The **standard selling price** will depend on a number of factors including the following.

- Anticipated market demand
- Competing products
- Manufacturing costs
- Inflation estimates

The **standard sales margin** is the difference between the standard cost and the standard selling price.

1.5.6 Challenges encountered during setting of Standards

- (i) Deciding how to incorporate inflation into planned unit costs.
- (ii) Agreeing on a performance standard (attainable or ideal).
- (iii) Deciding on the quality of materials to be used (a better quality will cost more but perhaps reduce material wastage).
- (iv) Estimating materials prices where seasonal price variations or bulk purchase discounts may be significant.
- (v) Finding sufficient time to construct standards as standard setting can be time consuming.
- (vi) Incurring the cost of setting up and maintaining a system for establishing standards is a big challenge to many firms.

1.6 TYPES OF STANDARD

There are **four types of standards**: i.e;

- (i) **ideal**,
- (ii) **attainable**,
- (iii) **current** and
- (iv) **basic**.

These can have an impact on employee motivation.

How demanding should a standard be? Should the standard represent perfect performance or easily attainable performance? There are four types of standard.

- An **ideal standard** is a standard which can be attained under perfect operating conditions: no wastage, no inefficiencies, no idle time, no breakdowns



- An **attainable standard** is a standard which can be attained if production is carried out efficiently, machines are properly operated and/or materials are properly used. Some allowance is made for wastage and inefficiencies
- A **current standard** is standard based on current working condition (current wastage, current inefficiencies)
- A **basic standard** is a long term standard which remains unchanged over the years and is used to show changes in efficiency or performance over a long period of time.

1.6.1 The different types of standard have a number of advantages and disadvantages.

- (a) **Ideal standards** can be seen as **long term targets** but are not very useful for day to day control purposes.
- (b) **Ideal standards cannot be achieved.** If such standards are used for budgeting, an allowance will have to be included to make the budget realistic and attainable.
- (c) **Attainable standards** can be used for **product costing**. Cost control, inventory valuation, estimating and as a basis for budgeting.
- (d) **Current standards** or attainable standards provide the **best basis for budgeting**, because they represent an achievable level of productivity.
- (e) Current standards **do not attempt to improve** on current levels of efficiency.
- (f) Current standards are useful during **periods when inflation is high**. They can be set on a month by month basis.
- (g) **Basic standards** are used to show **changes in efficiency or performance** over a long period of time. They are perhaps the least useful and least common type of standard in use.

1.6.2 The impact on employee behavior of the type of standard set

The type of standard set can have an impact on the behavior of the employees trying to achieve those standards.

Types of standards	Impact
Ideal	Some say that they provide employees with an incentive to be more efficient even though it is highly unlikely that the standard will be achieved. Others argue that they are likely to have an unfavorable effect on employee motivation because the differences between standards and actual results will always be adverse. The employees may feel that the goals are unattainable and so they will not work so hard.
Attainable	Might be an incentive to work harder as they provide a realistic but challenging target of efficiency.
Current	Will not motivate employees to do anything more than they are currently doing.
Basic	May have an unfavorable impact on the motivation of employees. Over time they will discover that they are easily able to achieve the standards. They may become bored and lose interest in what they are doing if they have nothing to aim for.

1.7 BUDGETS AND STANDARDS COMPARED

Budgets and standards are very similar and interrelated, but there are important differences between them.

1.7.1 Similarities

Budgets and standards are similar in the following ways.

- (a) They both involve looking to the future and forecasting what is likely to happen given a certain set of circumstances.
- (b) They are both used for control purposes. A budget aids control by setting financial targets or limits for a forthcoming period. Actual achievements or expenditures are then compared with the budgets and action is taken to correct any variances where necessary. A standard also achieves control by comparison of actual results against a predetermined target.
- (c) As well as being similar budgets and standards are interrelated. For example, a standard unit production cost can act as the basis for a production cost budget. The unit cost is multiplied by the budgeted activity level to arrive at the budgeted expenditure on production costs.

1.7.2 Differences

A budget is a quantified monetary plan for a future period, which managers will try to achieve. Its major function lies in communicating plans and coordinating activities within an organisation. On the other hand, a standard is a carefully predetermined quantity target which can be achieved in certain conditions.

There are, however, more important differences between budgets and standards.

Budgets	Standards
Gives planned total aggregate costs for a function or cost center	Shows the unit resource usage for a single task, for example the standard labour hours for a single unit of production.
Can be prepared for all functions, even where output cannot be measured	Limited to situations where repetitive actions are performed and output can be measured
Express in money terms	Need not to be expressed in money terms. For example a standard rate of output does not need a financial value put on it.

1.8 FLEXIBLE BUDGETS

1.8.1 Definition

A flexible budget is a budget which, by recognizing different cost behavior patterns, is designed to change as volume of activity changes. Flexible budgets should be used to show what cost and revenues should have been for the actual level of activity.

1.8.2 Preparing Flexible budgets

Step 1: The first step in the preparation of a flexible budget is the determination of cost behavior patterns, which means deciding whether costs are fixed, variable or semi variable.

Step 2: The second step in the preparation of a flexible budget is to calculate the budget cost allowance for each cost item.

Where;

Budget cost allowance = budgeted fixed cost* + (Actual number of units x Budgeted variable cost per unit)**

**nil for variable cost*

***nil for fixed cost*

Semi variable costs therefore need splitting into their fixed and variable components so that the budget cost allowance can be calculated. One method for splitting semi-variable costs is the high/low method.

1.8.3 Flexible budgets and performance management

- Budgetary control involves drawing up budgets for the areas of responsibility for individual managers (for example production managers, purchasing managers and so on) and of regularly comparing actual results against expected results.
- The differences between actual results and expected results are called variances and these are used to provide a guideline for control action by individual managers.

Note that individual managers are held responsible for investigating differences between budgeted and actual results, and are then expected to take corrective action or amend the plan in the light of actual events.

Activity 1: Preparation of a Flexible budget

(a) Prepare a budget for 2016 for the direct labour costs and overhead expenses of a production department flexed at the activity levels of 80%, 90% and 100%, using the information listed below.

(i) The direct labour hourly rate is expected to be shs.3,750.

(ii) 100% activity represents 60,000 direct labour hours.

(iii) Variable costs

Indirect labour shs.750 per direct labour hours

Consumable supplies shs.375 per direct labour hour

Canteen and other

Welfare services 6% of direct and indirect labour costs

(iv) Semi-variable costs are expected to relate to the direct labour hours in the same manner as for the last five years.

Year	Direct labour hours	Semi-variable costs Shs. "000"
2011	64,000	20,800
2012	59,000	19,800
2013	53,000	18,600
2014	49,000	17,800
2015	40,000 (estimate)	16,000 (estimate)

(v) Fixed costs

	Shs.
Depreciation	18,000
Maintenance	10,000
Insurance	4,000
Rates	15,000
Management salaries	25,000

(vi) Inflation is to be ignored.

(b) Calculate the budget cost allowance (i.e. expected expenditure) for 2016 assuming that 57,000 direct labour hours are worked.

Activity 2: Flexible budgets and performance management

Suppose that a company manufactures a single product, Z. Budgeted results and actual results for June 20X2 are shown below

	Budget	Actual results
Production and sales (units)	2,000	3,000
	Shs.	Shs.
Sales revenue (a)	<u>20,000</u>	<u>30,000</u>
Direct materials	6,000	8,500
Direct Labour	4,000	4,500
Maintenance	1,000	1,400
Depreciation	2,000	2,200
Rent and rates	1,500	1,600
Other costs	3,600	5,000
Total costs (b)	18,100	23,200
Profit (a) – (b)	1,900	6,800

You have been provided with the following estimates of cost behaviour for the company.

- Direct materials, direct labour and maintenance costs are variable.
- Rent and rates and depreciation are fixed costs.
- Other costs consist of fixed costs of shs.1,600 plus a variable cost of shs.1 per unit made and sold.

Required:

Prepare a budget that will be useful for management control purposes.

Activity 13.3:

The budgeted and actual results of Crunch Co for September were as follows. The company uses a marginal costing system. There were no opening or closing stocks.

	Fixed budget 1,000		Actual 700 units	
	Shs.	Shs.	Shs.	
Sales		20,000		14,200
Variable cost of sales				
Direct materials	8,000		5,200	
Direct labour	4,000		3,100	
Variable overhead	<u>2,000</u>		<u>1,500</u>	
		<u>14,000</u>		<u>9,800</u>
Contribution		6,000		4,400
Fixed costs		<u>5,000</u>		<u>5,400</u>
Profit/(loss)		<u>1,000</u>		<u>(1,000)</u>

Required:

Prepare a budget that will be useful for management control purposes.

1.8.4 Factors to consider when preparing flexible budgets

The mechanics of flexible budgeting are, in theory, fairly straightforward but in practice there are a number of points to consider before figures are simply flexed.

- (a) Splitting mixed costs is not always straightforward.
- (b) Fixed costs may behave in a step-line fashion as activity levels increase/decrease.
- (c) Account must be taken of the assumptions upon which the original fixed budget was based. Such assumptions might include the constraint posed by limiting factors, the rate of inflation, judgments about future uncertainty, the demand for the organizations products and so on.
- (d) By flexing a budget, a manager is effectively saying If I knew then what I know now, this is the budget I would have set. It is a useful concept but can lead to some concern as managers can become confused and frustrated if faced with continually moving targets.

1.8.5 The need for flexible budgets

We have seen that flexible budgets may be prepared in order to plan for variations in the level of activity above or below the level set in the fixed budget. It has been suggested, however, that since many cost items in modern industry are fixed costs, the value of flexible budgets in planning is dwindling.

- (a) In many manufacturing industries, plant costs (depreciation, rent and so on) are a very large proportion of total costs, and these tend to be fixed costs.
- (b) Wage costs also tend to be fixed, because employees are generally guaranteed a basic wage for a working week of an agreed number of hours.
- (c) With the growth of service industries, labour (wages or fixed salaries) and overheads will account for most of the costs of a business, and direct materials will be a relatively small proportion of total costs.

Flexible budgets are nevertheless necessary, and even if they are not used at the planning stage, they must be used for budgetary control variance analysis.

1.9 THE PRINCIPLE OF CONTROLLABILITY

The principle of controllability is that managers of responsibility centers should only be held accountable for costs over which they have some influence.

1.9.1 Budget centers

Budgetary control is based around a system of budget centres. Each budget centre will have its own budget and a manager will be responsible for managing the budget centre and ensuring that the budget is met.



The selection of budget centers in an organization is therefore a key first step in setting up a control system. What should the budget centers be? What income, expenditure and/or capital employment plans should each budget centre prepare? And how will measures of performance for each budget centre be made?

A well-organized system of control should have the following features.

Feature	Explanation
A hierarchy of budget centers	If the organizations are quite large a hierarchy is needed. Subsidiary companies, departments and work section might be budget centres. Budgets of each section would then be consolidated into a departmental budget, departmental budgets in turn would be consolidated into the subsidiary's budgets in turn would be consolidated into the subsidiary's budgets of each subsidiary would be combined into a master budget for the group as a whole.
Clearly identified responsibilities for achieving budget targets	Individual managers should be made responsible for achieving the budget targets of a particular budget centre.
Responsibilities for revenues, costs and capital employed	Budget centers should be organized so that all the revenues earned by an organization, all the costs it incurs, and all the capital it employs are made the responsibility of someone within the organization an appropriate level of authority in the management hierarchy.

Budgetary control and budget centers are therefore part of the overall system of **responsibility accounting** within an organization.

Responsibility accounting is a system of accounting that segregates revenue and costs into areas of personal responsibility in order to monitor and assess the performance of each part of an organization.

1.9.2 Controllable costs

Controllable costs are items of expenditure which can be directly influenced by a given manager within a given time span.

Care must be taken to distinguish between controllable costs and uncontrollable costs in variance reporting. The controllability principle is that managers of responsibility centers should only be held accountable for costs over which they have some influence. From a motivation point of view this is important because it can be very demoralizing for managers who feel that their performance is being judged on the basis of something over which they have no influence. It is also important from a control point of view in that control reports should ensure that information on costs is reported to the manager who is able to take action to control them.

Responsibility accounting attempts to associate costs, revenues, assets and liabilities with the managers most capable of controlling them. As a system of accounting, it therefore distinguishes between controllable and uncontrollable costs.

Most variable costs within a department are thought to be controllable in the short term because managers can influence the efficiency, with which resources are used, even if they cannot do anything to raise or lower price levels.

A cost which is not controllable by a junior manager might be controllable by a senior manager. For example; there may be high direct labour costs in a department caused by excessive overtime working. The junior manager may feel obliged to continue with the overtime to meet production schedules, but his senior may be able to reduce costs by hiring extra full-time staff, thereby reducing the requirements for overtime.

A cost which is not controllable by a manager in one department may be controllable, by a senior manager. For example, there may be high direct labour costs in a department caused by excessive overtime working. The junior manager may feel obliged to continue with the overtime to meet production schedules, but his senior may be able to reduce costs by hiring extra full –time staff, thereby reducing the requirements for overtime.

A cost which is not controllable by a manager in one department may be controllable by a manager in another department. For example, an increase in material costs may be caused by buying at higher prices than expected (controllable by the purchasing department) or by excessive wastage (controllable by the production department) or by a faulty machine producing rejects (controllable by the maintenance department).

Some costs are non- controllable, such as increases in expenditure items due to inflation. Other costs are controllable, but in the long term rather than the short term. For example, production costs might be reduced by the introduction of new machinery and technology, but in the short term, management must attempt to do the best they can with the resources and machinery at their disposal.

1.9.3 The controllability of fixed costs.

It is often assumed that all fixed costs are non-controllable in the short run .This is not so.

- (a) Committed fixed costs are those costs arising from the possession of plant, equipment, buildings and an administration department to support the long-term needs of the business. These costs (depreciation, rent, administration salaries)are largely non-controllable in the short term because they have been committed by longer term decisions affecting longer term needs. When a company decides to cut production drastically, the long-term committed fixed costs will be reduced, but only after redundancy terms have been settled and assets sold.
- (b) Discretionary fixed costs, such as advertising and research and development costs, are incurred as a result of a top management decision, but could be raised or lowered at fairly short notice(irrespective of the actual volume of production and sales).

1.9.4 Controllability and apportioned costs.

Managers should only be held accountable for costs over which they have some influence. This may seem quite straightforward in theory, but it is not always so easy in practice to distinguish controllable from uncontrollable costs. Apportioned overhead costs provide a good example. Suppose that a manager of a production department in a manufacturing company is made responsible for the costs of his department. These costs include directly attributable overhead items such as the costs of indirect labour employed and indirect materials consumed in the department.

The department's overhead costs also include an apportionment of costs from other cost centers, such as rent and rates for the building it shares with other departments and a share of the costs of the maintenance department.

Should the production manager be held accountable for any of these apportioned costs?

- (a) Managers should not be held accountable for costs over which they have no control. In this example, apportioned rent and rates costs would be controllable by the production department manager.
- (b) Managers should be held accountable for costs over which they have some influence. In this example, it is the responsibility of the maintenance department manager to keep maintenance costs within budget. But their costs will be partly variable and partly fixed, and the variable cost element will depend on the volume of demand for their services. If the production departments staff treat their equipment badly we might expect higher repair costs, and the production department manager should therefore be made accountable for the repair costs that his department makes the maintenance department incur on its behalf.
- (c) Charging the production department with some of the costs of the maintenance department prevents the production department from viewing the maintenance services as free services. Over-use would be discouraged and the production manager is more likely to question the activities of the maintenance department possibly resulting in a reduction in maintenance costs or the provision of more efficient maintained services.

1.9.5 Controllability and dual responsibility

Quite often a particular cost might be the responsibility of two or more managers. For example, raw materials costs might be the responsibility of the purchasing manager (prices) and the production manager (usage). A reporting system must allocate responsibility appropriately. The purchasing manager must be responsible for any increase in raw materials prices whereas the production manager should be responsible for any increase in raw materials usage.





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COST & MGT ACCOUNTING - PAPER 7

UNIT 13 - Variance Analysis



12.0

VARIANCE ANALYSIS

UNIT 12 OVERVIEW

- Definition of Variance
- Meaning of variance analysis
- The Basic Variances
- The reasons for variances
- Operating statements
- Investigating variances

1.1 VARIANCE – *Definition*

A **variance** is the difference between an actual result and an expected result.

1.2 VARIANCE ANALYSIS – *Definition*

Variance analysis is the process by which the total difference between standard and actual results is analysed.

1.2.1 Adverse (S) Vs Favourable (F) variance

When actual results are better than expected results, we have a **favourable variance (F)**. If actual results are worse than expected results, we have **an adverse variance (A)**.

1.3 BASIC VARIANCES

Basic variances are divided into 5 major categories, i.e;

- (i) Sales Variances
- (ii) Materials Variances
- (iii) Labour Variances
- (iv) Variable overhead variance
- (v) Fixed overhead variances

1.3.1 SALES VARIANCES

- **The selling price variance** measures the effect on expected profit of a selling price difference to the standard selling price. It is calculated as the difference between what the sales revenue should have been for the actual quantity sold, and what it was.
- **The sales volume variance** measures the increase or decrease in expected profit as a result of the sales volume being higher or lower than budgeted. It is calculated as the difference between the budgeted sales volume and the actual sales volume multiplied by the standard profit per unit.
- **Sales mix variance** and Quantity variances are defined later in this unit

1.3.2 MATERIALS VARIANCES

- **The material total variance** is the difference between what the output actually cost and what it should have cost, in terms of material. It can be divided into the following two sub-variances.
- **The material price variance** is the difference between what the material did cost and what it should have cost.
- **The material usage variance** is the difference between the standard cost of the material that should have been used and the standard cost of the material that was used.
- **Materials mix and yield variances** are discussed later in this unit.

1.3.3 LABOUR VARIANCES

- **The labour total variance** is the difference between what the output should have cost and what it did cost, in terms of labour. It can be divided into two sub-variances.
- **The labour rate variance** is the difference between what the labour did cost and what it should have cost.
- **The labour efficiency variance** is the difference between the standard cost of the hours that should have been worked and the standard cost of the hours that were worked.

1.3.4 VARIABLE OVERHEAD VARIANCES

- **The variable production overhead total variance** is the difference between what the output should have cost and what it did cost, in terms of variable production overhead. It can be divided into two sub-variances.
- **The variable production overhead expenditure variance** is the difference between the amount of variable production overhead that should have been incurred in the actual hours actively worked, and the actual amount of variable production overhead incurred.
- **The variable production overhead efficiency variance** is the difference between the standard cost of the hours that should have been worked for the number of units actually produced, and the standard cost of the actual number of hours worked.

1.3.5 FIXED OVERHEAD VARIANCES

- **Fixed production overhead total variance** is the difference between fixed production overhead incurred and fixed production overhead absorbed. In other words, it is the under-or over-absorbed fixed production overhead.
- **Fixed production overhead expenditure variance** is the difference between the budgeted fixed production overhead expenditure and actual fixed production overhead expenditure.
- **Fixed production overhead volume variance** is the difference between actual and budgeted production/volume multiplied by the standard absorption rate per unit.
- **Fixed production overhead volume efficiency variance** is the difference between the number of hours that actual production should have taken, and the number of hours actually taken (that is, worked) multiplied by the standard absorption rate per hour.

- **Fixed production overhead volume capacity variance** is the difference between budgeted hours of work and the actual hours worked, multiplied by the standard absorption rate per hour.

Activity 1: *Basic Variances*

A company produces and sells one product only, the thing, the standard cost for one unit being as follows.

	Shs.
Direct material A – 10 kilograms at shs.20 per kg	200
Direct material B – 5 litres at shs.6 per litre	30
Direct wages – 5 hours at shs.6 per hour	30
Fixed production overhead	<u>50</u>
Total standard cost	<u>310</u>

The fixed overhead included in the standard cost is based on an expected monthly output of 900 units. Fixed production overhead is absorbed on the basis of direct labour hours.

During April the actual results were as follows.

Production	800 units
Material A	7,800kg used, costing shs.159,900
Material B	4,300 litres used, costing shs.23,650
Direct wages	4,200 hours worked for shs.24,150

Fixed production overhead shs.47,000.

Required:

- Calculate price and usage variances for each material.**
- Calculate labour rate and efficiency variances.**
- Calculate fixed production overhead expenditure and volume variances and then subdivide the volume variance.**

1.4 THE REASONS FOR VARIANCES

- The table below presents a summary of the above basic variances and possible reasons for the respective variances.
- For exam purposes, candidates are advised to review the information provided and use their individual imagination to suggest possible reasons for the variances.

Variance	Favourable	Adverse	Calculation	
Material price	Unforeseen discounts received Greater care in purchasing Change in material standard	Price increase Careless purchasing Change in material standard	Price Based on actual purchases What should it have cost? What did it cost?	Shs. X <u>(X)</u> <u>X</u>
Material usage	Material used of higher quality than standard More effective use made of material Errors in allocating material to jobs	Defective material Excessive waste Theft Stricter quality control Errors in allocating material to jobs	Usage Based on actual production What should have been used? What was used? Difference valued at standard cost per kg.	Kgs X <u>(X)</u> <u>X</u> <u>X</u>
Labour rate	Use of workers at a rate of pay lower than standard	Wage rate increase	Rate Based on actual hours paid What should it have cost? What did it cost?	Shs. X <u>(X)</u> <u>X</u>
Idle time	Possible if idle time has been built into the budget	Machine breakdown Non-availability of material Illness or injury to worker	Idle time Hours worked Hours paid Difference valued at Standard rate per hour	Hrs X <u>(X)</u> <u>X</u>
Labour efficiency	Output produced more quickly than expected, because of work motivation, better quality of equipment or materials, better learning rate Errors in allocating time to jobs	Lost time in excess of standard allowed Output lower than standard set because of lack of training, sub-standard material etc Errors in allocating time to jobs	Efficiency Based on actual production How long should it have taken? How long did it take? Difference valued at standard rate per hour	Hrs X <u>(X)</u> <u>X</u> <u>X</u>
** Overhead expenditure	Savings in costs incurred More economical use of services	Increase in cost of services Excessive use of services Change in type of services used	Based on actual hours worked What should it have cost? What did it cost?	Shs. X <u>(X)</u> <u>X</u>
Overhead volume	Production or level of activity greater than budgeted	Production or level of activity less than budgeted	Budgeted units Actual units Difference valued at OAR per unit	Units X <u>(X)</u> <u>X</u> <u>X</u>

Fixed overhead capacity	Production or level of activity greater than budgeted	Production or level of activity less than budgeted	Budgeted hrs worked	Hrs X
			Actual hrs worked	(X)
				<u>X</u>
			Difference valued at OAR per hour	<u>X</u>
Selling price	Unplanned price increase	Unplanned price reduction	For the quantity sold	Shs.
			What revenue should have been	
			Generated	X
			Actual revenue	<u>(X)</u>
			<u>X</u>	
Sales volume	Additional demand	Unexpected fall in demand Production difficulties	Budgeted sales	Units X
			Actual sales	(X)
				<u>X</u>
			Difference valued at standard profit per unit	<u>X</u>

1.5 OPERATING STATEMENTS

- An operating statement is a regular report for management which compares actual costs and revenues with budgeted figures and shows variances.
- There are several ways in which an operating statement may be presented. Perhaps the most common format is one which reconciles budgeted profit to actual profit. Sales variances are reported first, and the total of the budgeted profit and the two sales variances results in a figure for actual sales minus the standard cost of sales. The cost variances are then reported, and an actual profit calculated.

1.5.1 Profoma operating Statement (*Absorption Costing System*)

	Favourable (F) Shs	Adverse (A) Shs	Total Shs
Budgeted profit			XX
Sales variance:			
<i>Sales price variance</i>	XX	XX	
<i>Sales volume variance</i>	<u>XX</u>	<u>XX</u>	<u>XX</u>
Actual sales minus the standard cost of sales			XX
COST VARIANCES:			
Materials variances	XX	XX	
Labour Variances	XX	XX	
Variable overhead variances	XX	XX	
Fixed overhead variances	<u>XX</u>	<u>XX</u>	
	XX	XX	<u>XX</u>
Actual profit for the period			<u>XX</u>

Activity 2: Operating Statement

A company manufactures one product, and the entire product is sold as soon as it is produced. There are no opening or closing inventories and work in progress is negligible. The company operates a standard costing system and analysis of variances is made every month. The standard cost card for the product, a widget, is as follows.

STANDARD COST CARD WIDGET

		Shs.
Direct materials	0.5 kilos at shs.4 per kilo	2.00
Direct wages	2 hours at shs.2.00 per hour	4.00
Variable overheads	2 hours at shs.0.30 per hour	0.60
Fixed overhead	2 hours at shs.3.70 per hour	7.40
Standard cost		14.00
Standard profit		6.00
Standard selling price		20.00

Budgeted output for January was 5,100 units. Actual results for January were as follows.

Production of 4,850 units was sold for shs.95,600

Materials consumed in production amounted to 2,300 kilos at a total cost of shs.9,800.

Labour hours paid for amounted to 8,500 hours at a cost of shs.16,800.

Actual operating hours amounted to 8,000 hours.

Variable overheads amounted to shs.2,600.

Fixed overheads amounted to shs.42,300.

Required:

Calculate all variances and prepare an operating statement for January.

1.5.2 Operating statements in a marginal cost environment

- There are two main differences between the variances calculated in an absorption costing system and the variances calculated in a marginal costing system. In a marginal costing system the only fixed overhead variance is an expenditure variance and the sales volume variance is valued at standard contribution margin, not standard profit margin.

Activity 3:

Returning to the question above, now assume that the company operates a marginal costing system.

Required:

Recalculate any variances necessary and produce an operating statement.

1.5.3 Profoma operating Statement (*Marginal Costing System*)

	Favourable (F) Shs	Adverse (A) Shs	Total Shs
Budgeted profit			XX
Add: Budgeted fixed production costs			<u>XX</u>
Budgeted contribution			XX
Sales variance:			
<i>Sales price variance</i>	XX	XX	
<i>Sales volume variance</i>	<u>XX</u>	<u>XX</u>	<u>XX</u>
Actual sales minus the standard variable cost of sales			XX
COST VARIANCES:			
Materials variances	XX	XX	
Labour Variances	XX	XX	
Variable overhead variances	<u>XX</u>	<u>XX</u>	
	XX	XX	<u>XX</u>
Actual contribution			XX
Budgeted fixed production overhead expenditure variance	XX	XX	
Actual fixed production overhead	<u>XX</u>	<u>XX</u>	
			<u>XX</u>
Actual Profit			XX

1.6 INVESTIGATING VARIANCES

1.6.1 The decision whether or not to investigate.

Before management decide whether or not to investigate the reasons for the occurrence of a particular variance, there are a number of factors which should be considered in assessing the significance of the variance. These include;

- (i) **Materiality.** Because a standard cost is really only an average expected cost, small variations between actual and standard are bound to occur and are unlikely to be significant. Obtaining an 'explanation' of the reasons why they occurred is likely to be time consuming and irritating for the manager concerned. For such variations further investigation is not worthwhile since such variances are not controllable.
- (ii) **Controllability.** Only controllable variances should be investigated. Uncontrollable variances call for a change in plan, not an investigation into the past.
- (iii) **The type of standard being used.** The efficiency variance reported in any control period, whether for materials or labour, will depend on the efficiency level set. If, for example, an ideal standard is used, variances will always be adverse. Similarly, if basic standards are used, variances are likely to be favourable.
- (iv) **Variance trend.** Although small variations in a single period are unlikely to be significant, small variations that occur consistently may need more attention. The trend provides an indication of whether the variance is fluctuating within acceptable control limits or becoming out of control.

- (v) **Interdependence between variances.** One variance might be inter-related with another, and much of it might have occurred only because the other variance occurred too. When two variances are interdependent (interrelated) one will usually be adverse and the other favourable. For example, an adverse selling price variance might be counterbalanced by a favourable sales volume variance.
- (vi) **Costs of investigation.** The costs of an investigation should be weighed against the benefits of correcting the cause of a variance.

1.6.2 Variance investigation models

The rule-of thumb and statistical significance variance investigation models and/or statistical control charts can be used to determine whether a variance should be investigated.

- (a) **The rule of thumb model.** This involves deciding a limit and if the size of a variance is within the limit, it should be considered immaterial. Only if it exceeds the limit is it considered materially significant, and worthy of investigation.
- (b) **Statistical significance model.** Historical data is used to calculate both a standard as an expected average and the expected standard deviation around this average when the process is under control. By assuming that variances that occur are normally distributed around this average, a variance will be investigated if it is more than a distance from the expected average that the estimated normal distribution suggests is likely if the process is in control.
- (c) **Statistical control charts.** By marking variances and control limits on a control chart, investigation is signaled not only when a particular variance exceeds the control limit but also when the trend of variances shows a progressively worsening movement in actual results (even though the variance in any single control period has not yet overstepped the control limit).



BUDGETING

Learning outcomes;

- Definition of a budget
- Explain the purposes of preparing budgets
- Discuss conflicting roles of budgets
- Discuss different stages involved in a budgeting process
- Explain the meaning of a budget period
- Discuss the administration of the budget
- Explain the meaning of contents of a budget manual
- Identify and describe various types of budgets
- Differentiate between fixed and flexible budgets
- Preparation of cash and department budgets



BUDGETING

The functions and purposes of the budget

Definition:

A budget is a quantitative statement for a defined period of time, which may include planned revenues, expenses and cash flows.

A budget period: This refers to the period or time to which the budget relates. This might be a month, quarter a year, half a year, a year and so on.

The main purposes of budgeting include the following.

- To coordinate the activities of different departments towards a common corporate goal
- To communicate targets to the managers responsible for achieving them
- To establish a system of control by comparing budgeted and actual results
- Motivation – The budget may be used as a target for managers to aim for. Rewards should be given for operating within or under budgeted levels of expenditure.
- Planning – A budgeting process forces a business to look to the future for its survival.
- Evaluation – The budget may be used to evaluate the financial results of a part of the business such as a cost centre and also the actions of a manager within a business.

Budget Committee

A budget committee is a team of senior officials with the organization who are responsible for the coordination, preparation and approval of budgets. This committee may comprise the chief executive, the management accountant (acting as a budget officer) and functional heads. The functions of the budget committee are to:

- Agree policy issues with regard to budgets
- Coordinate budgets
- Suggest amendments to budgets (e.g. because there is inadequate profit)
- Approve budgets after amendments as necessary
- Examine comparisons of budgeted and actual results and recommend corrective action if this has been already taken.

The Budget Manual: This is a detailed set of documents providing guidelines and information about the budget process.

1. A budget manual may contain the following;
 - An explanation of the objectives of the budgetary process
 - The purpose of budgetary planning and control
 - The objectives of the various stages of the budgetary process
 - The importance of budget in the long term planning of the business
2. The organizational structure
 - An organizational chart
 - A list of individuals holding budget responsibility
3. An outline of the principle budgets and the relationship between them



4. Administrative details of the budget preparation
 - Membership and terms of reference of the committee
 - The sequence in which budgets are to be prepared
 - A timetable
5. Procedure matters
 - Specimen forms and instructions for their completions
 - Specimen report
 - Account codes (or chart of accounts)
 - The name of the budget officer

Principle budget factor

The first task in the budget process is to identify the principle factor. This is known as the key budget factor or limiting factor. The principle budget factor can be sales demand, machine capacity, and distribution and selling resources, labour hours, raw materials, capital (finance) and so on.

Operating budgets

Operating budgets are functional or departmental budgets that may exist within an organization. These include; sales budget expressed in terms of quantity and value, production budget, material usage, material purchases, labour budgets

Example 1:

Kampala Manufacturers Ltd produces three products x y and z. For the coming accounting period budgets are to be prepared based on the following information.

Budgeted sales

Product x	2,000 @ Shs1,000
Product y	4,000 @ Shs1,300
Product z	3,000 @ Shs1,500

Budget usage of raw materials

	A	B	C
Product x	5	2	
Product y	3	2	2
Product z	2	1	3
Cost per unit	Shs50	Shs30	Shs40

Finished stock budget

	Product x	Product y	Product z
Beginning	500	800	700
End	600	1,000	800

Raw material stock

	A	B	C
Beginning	21,000	10,000	16,000
End	18,000	9,000	12,000



Labour hours per unit

	Product x	product y	product z
Expected hour per unit	4	6	8
Expected hourly rate (Labour)	Shs30	Shs30	Shs30

Required;

Draw up the following operating budget

- Sale budget in terms of both quantity and value
- Production budget
- Material usage budget
- Material purchase budget
- Labour budget

Solution

- Sales budget

Product	Quantity (Unit)	Selling Price Shs	Sales revenue Shs'000'
x	2,000	1,000	2,000
y	4,000	1,300	5,200
z	3,000	1,500	4,500
			11,700

- Production budget

From finished stock reconciliation,

Opening stock + production – sales forecast = Closing stock

Required production = Forecast sales + desired level of closing stock – opening stock

Products	x	y	z
Forecast sales	2,000	4,000	3,000
Add closing stock	600	1,000	800
Less opening stock	(500)	(500)	(700)
Required	2,100	4,200	3,100



c) Material usage budget

Material = Usage per unit x units produced

Product	Required production	Raw materials (Kgs)		
		A	B	C
X	2,100	10,500	4,200	-
Y	4,200	12,600	8,400	8,400
Z	3,100	6,200	3,100	9,300
		29,300	15,700	17,700

d) Material purchase budget

Same reconciliation as the one for finished goods i.e. From raw materials stock reconciliation,
Opening stock + Materials Purchases – Usage = Closing stock

Required material purchases = Usage + closing stock – opening stock

	Raw materials (Kgs)			
	A	B	C	
Usage	29,300	15,500	17,700	
Add closing stock	18,000	9,000	12,000	
Less opening stock	(21,000)	(10,000)	(16,000)	
Required Materials Purchase	26,300	14,700	13,700	
Cost per Kg (Shs)	50	30	40	
Materials cost (Shs)	1,315,000	441,000	548,000	2,304,000

e) Labour budget

	Product			
	x	y	Z	
Required production	2,100	4,200	3,100	
Hrs per unit	4	6	8	
Total hours required	8,400	25,200	24,800	
Cost per hour (Shs)	30	30	30	
Total cost (Shs)	252,000	756,000	744,000	1,752,000



CASH BUDGETS

A cash budget is a detailed estimate of cash receipts from all sources and cash payments for all purposes and the resultant cash balances during the period.

Typical receipts include:

- Cash sales
- Collection from Accounts receivables
- Sale of non-current assets
- Receipts of dividend and interest
- Issue of new shares and loan stock
- Receipts from loan payments
- Fees, royalties and other incomes

Typical payments include:

- All payments to creditors for inventory and raw materials purchases
- Wages, salaries and bonus payments
- Purchase of fixed assets
- Payment of taxes
- Loan repayments

A cash budget focuses strictly on cash movements and therefore anything that doesn't involve cash doesn't appear in a cash budget. For example; provision for taxation, depreciation, provision for bad debts etc.

The two major advantages of having a cash budget is that, to ensure that there is an earlier plan for solving a cash shortage that may be experienced in the future of an entity and that should there be a cash surplus expected, there is a proper plan to have it invested appropriately.

Format of a cash Budget

	Period					
	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Receipts						
Cash Sales	xxx	xxx	xxx	xxx	xxx	xxx
Collection from Customers	xxx	xxx	xxx	xxx	xxx	xxx
Sale of assets		xxx				
Issue of shares						xxx
Total Receipts	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Payments						
Wages and Salaries	xxx	xxx	xxx	xxx	xxx	xxx
Payment of taxes	xxx	xxx	xxx	xxx	xxx	xxx
Payment to suppliers	xxx	xxx	xxx	xxx	xxx	xxx
Acquisition of non-current assets					xxx	
Total Payments	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Balance b/f	xxxxx	xxxx	wwww	zzzz	yyyy	Mmmm
Balance c/f	<u>xxxx</u>	<u>wwww</u>	<u>zzzz</u>	<u>yyyy</u>	<u>mmmm</u>	<u>nnnn</u>



The usefulness of cash budgets

- It is the most important planning tool to an organization as it shows the cash effect of all plans made within the budgetary process and hence its preparation can lead to a modification of other operating budgets.
- It can also give management an indication of potential problem that could arise and allows them the opportunity to take action to avoid such problems. The four major positions that can arise from a cash budget include:

Cash position	appropriate management action
Short-term surplus	<ul style="list-style-type: none">- Pay creditors early to obtain discounts- Attempt to increase sales by increase debtors and stock- Make short-term investments
Short-term deficit	<ul style="list-style-type: none">- Increase creditors- Reduce debtors- Arrange for bank overdrafts
Long-term Surplus	<ul style="list-style-type: none">- Make long term investments- Expand- Diversify- Replace/ update fixed assets
Long-term deficit	<ul style="list-style-type: none">- Raise long-term finance (such as issue of share capital)- Consider shut down/ disinvestments opportunities



Question 4 June /2010

Property Masters Ltd is in a process of preparing its master budget for the 6 months to December 2010. The statement of financial position for the year to 30 June 2010 is estimated to be as follows:

	Shs'000'	Shs'000'
Non-current assets	140,000	
Less depreciation	<u>(14,000)</u>	126,000
Current assets:		
Inventory	25,000	
Trade receivables	24,600	
Bank	<u>3,000</u>	
		52,600
Current liabilities:		
Trade payables	25,000	
Other payables	<u>9,000</u>	
		<u>(34,000)</u>
Net-current assets		<u>18,600</u>
Total assets less liabilities		<u>144,600</u>
Capital & reserves:		
Share capital		100,000
Retained earnings		<u>44,600</u>
		<u>144,600</u>

The budget committee have derived the following forecasts for the 6 months to 31 December 2010:

	Sales (units)	Purchases Shs'000'	Wages & salaries Shs'000'	Overhead excluding depreciation Shs'000'	Purchase of fixed assets Shs'000'	Issue of shares Shs'000'	Dividends Shs'000'
May	4,000	12,000	8,000	7,000			
June	4,200	13,000	8,000	7,000			
July	4,500	14,000	8,000	7,000			
Aug	4,600	18,000	10,000	7,000			
Sept	4,800	16,000	10,000	7,000		20,000	
Oct	5,000	14,000	10,000	8,000			10,000
Nov	3,800	12,000	12,000	8,000	30,000		
Dec	3,800	12,000	12,000	8,000			

Additional information:

- (a) Selling price in May 2010 was Shs6,000 per unit and this is estimated to increase to Shs8,000 in October. 50% of sales are for cash and 50% on credit paid for 2 months later.
- (b) Purchases are to be paid for 2 months after purchase.
- (c) 75% of the wages and salaries are to be paid for in the month they will be incurred and 25% in the following month.



- (d) Overheads are to be paid one month after they have been incurred.
- (e) Fixed assets are to be paid for in three equal installments following the purchase.
- (f) Dividends are to be paid 3 months after they have been declared and receipts from the issue of shares are to be received in the same month as budgeted.
- (g) Fixed assets are depreciated at 10 % per annum on a straight-line basis on those assets owned at 31 December 2010.
- (h) Closing inventory at the beginning of the period under review was equal to the previous 2 months' purchases. At 31 December 2010, it is estimated to equal to 3 months' purchases.

Required:

Prepare a cash budget for the 6 months to 31 December 2010.

(20 marks)



Budgeted profit and loss account and balance sheet

As well as wishing to forecast its cash position, a business might want to estimate its profitability and its financial position for the coming period. This would involve the preparation of a budgeted profit and loss account and balance sheet, along with the cash budget which form the master budget.

Other types of Budgets

- Fixed budgets
- Flexible budgets
- Rolling budgets
- Zero based Budgets
- Activity based budget
- Incremental budgets

Fixed Budgets

A fixed budget is a budget which is designed to remain unchanged regardless of the volume of output or sales achieved.

The master budget is prepared before the beginning of the budget period is known as the fixed budget. The term “fixed” means the following:

- The budget is prepared on the basis of an estimated volume of production and an estimated volume of sales, but no plans are made for the events that actual volumes of production and sales may differ from the budgeted volume.
- When actual volumes of production and sales during a control period (month or a quarter) are achieved a fixed budget is not adjusted to the new levels of activity.

Flexible Budgets

A flexible budget is a budget, which by recognizing different cost behavior pattern, is designed to change as volumes of output change.

Flexible budgeting uses the principle of marginal costing. In estimating future costs it's often necessary to start by looking at the cost behavior in the past. In case you are provided with data at two budgeted levels, for costs which are the same at two levels, it implies they are fixed and hence expected to remain fixed at the actual level of activity achieved.

If a cost is not constant but cost per unit at two activity levels is the same, it implies the cost is variable and hence adjusting it to the new level achieved is needed, multiply the number of units at the actual level of activity with the cost per unit from the budgeted data.

Costs which have behaved as mixed in the past i.e. not the same in total at two activity levels and per unit, it means the costs are semi-variable. Here we use the technic called High-Low method to separate variable and fixed cost elements.



Advantage of a flexible budget

- It gives a more realistic way of comparing actual results against budgeted.
- The budget is adjusted to reflect the changes in the business environment and management will be aware of such changes at the planning stage.

Flexible Budgets and Budgetary control

Budgetary control is the practice of establishing budgets which identify areas of responsibility for individual managers (e.g. Production managers, Purchasing managers and so on) and of regularly comparing actual results against expected results. The most important method of budgetary control is variance analyses which involves the comparison of actual results achieved during the control period (usually a month or a year) with a flexible budget. The difference between actual and expected results are called variances and these are used to provide guidance for control action by individual managers.

Example

Question 4 Dec/2010

- (a) Fontana Ltd deals in the manufacture of detergents. The company uses a marginal costing system. The actual and budgeted results for November 2010 were as follows: There were no opening or closing inventories.

	Fixed budget	Actual
Sales & production	1,000 units	700 units
	Shs'000'	Shs'000'
Sales	20,000	14,200
Variable cost of sales:		
Direct materials	8,000	5,200
Direct labour	4,000	3,100
Variable overhead	<u>2,000</u>	<u>1,500</u>
Contribution	14,000	9,800
Fixed costs	<u>(5,000)</u>	<u>(5,400)</u>
Profit/ (loss)	<u>1,000</u>	<u>(1,000)</u>

Required:

Prepare a budget that will be useful for management control purposes.

(10 marks)



BUDGETING APPROACHES

Incremental and Zero Based budgeting (ZBB)

Incremental Budgeting is the traditional approach to budget and involves basing next period's (year's) budget on the current year's results, plus extra amount for estimated growth or inflation next years. Incremental budgeting is concerned mainly with the increments in cost and revenues, which will occur in the accounting period.

Advantages

- It is administratively easy to prepare
- It's a reasonable procedure if operations are effective and economical.

Disadvantages

- It's an efficient form of budgeting as it encourages budgetary slack and wasteful spending to creep into budgets.
- Past inefficiencies are carried forward in the next period's (year's) budget because cost levels are rarely subjected to close scrutiny.

Budgetary slack is the difference between the minimum necessary costs and the cost built in the budget or actually incurred.

Zero Based Budgeting

Zero base based budgeting involves preparing a budget for each cost centre from a zero base. Every item of expenditure has then to be justified in its entirety in order to include in the next year's budget.

Steps involved in preparing a ZBB

- Define decision packages. A decision package is a comprehensive description of specific organizational activity which management can use to evaluate the activities and rank them in their order of priority. Managers prepare decision packages for the activities within the budget centre for which they are responsible.
- Evaluate and rank packages. Each activity is evaluated and ranked on the basis of its benefit to the organization. The ranking process provides managers with a technique to allocate search resources between different activities.
- Allocate resources. Resources in the budget are then allocated to the funds available and the evaluation and ranking of the competing packages.

Advantages of Zero Base Budgets

- It's possible to identify and remove inefficient or absolute operations.
- It forces employees to avoid wasteful expenditure



- It can provide a budgeting and a planning tool for management which responds to change in the business environment. Obsolete items of expenditure can be identified and dropped.
- The documentation required provides all management with a coordinated, in – depth appraisal of an organization’s operations.
- It challenges status quo and forces an organization to examine alternative activities existing expenditure levels.

Disadvantages of ZBB

- Short-term benefits might be over emphasized to the detriment of long-term benefits.
- The false idea that all decisions have to be made in the budget might be encouraged.
- Management may not have the required skills of constructing decision packages and ranking of activities.
- It’s a time consuming method of budgeting.
- The organization’s information system may not be capable of providing suitable information for budgeting process.

Rolling Budgeting

A rolling budget is a budget, which is continuously updated by adding a further accounting period (a month or quarter) when the earlier accounting period has expired.

Advantages of a Rolling Budget

- They reduce the element of uncertainty in Budgeting. Rolling budgets concentrate detailed planning and control on short-term prospects where the degree of uncertainty is smaller.
- They force managers to re-assess the budget regularly, and to produce budgets, which are up to date in the light of current events and expectations.
- Planning and controlling will be based on a recent plan instead of a fixed annual budget that might have made many months ago and which is realistic.
- Realistic budgets are likely to have better motivational influence on managers.
- There is always a budget, which extends for several months ahead.

Disadvantages

- They involve more time, effort and money in budget preparation.
- Frequent budgeting might have an off-putting effect on manager who doubts the value of preparing one budget after another at regular intervals.
- Revision to the budget might involve revision to standard costs too, which in term would involve revision to stock valuation.

Activity Based Budgeting (ABB)

This is a method of budgeting which is based on activity based costing. It involves defining the activities which underlie a particular department or project. The steps involved include:

- The work of each department is analyzed by its major activities required and respective cost drivers identified.



- The budget cost for the required activities is determined and cost per unit of activity is calculated.
- Future costs can then be budgeted by deciding on future activity levels and working backwards to the required resource input.

Advantages of ABB

- It creates awareness to management that its activities and not production which produces profit. This in turn encourages management to control activities with greater reference to cost drivers.
- Activity based costing offers an alternative way of analyzing costs which may be more reliable than the traditional absorption costing used for budgeting.
- Resource allocation decisions are assisted by the activity related cost information arising from ABB system.
- ABB links directly to total quality management programme by relating the cost of an activity to the level of service provided.

Disadvantages of ABB

- The information system in place may not be appropriate in identifying the necessary information about the activities required and how to cost them making ABB more difficult.
- It is time consuming and costly.

SECTION A

Question 1

- i) In this method, the selling price of a product is arrived at by adding estimated administration, selling distribution overheads and desired profit to the factory cost of the product:
- a) Marginal cost method.
 - b) Full cost method.
 - c) Standard cost method.
 - d) Conversion cost method.
- ii) Which one of the following statements is false?
- a) Cash flows from a project can be worked out only on the basis of certain probabilities.
 - b) No additional working capital will be required in case of an existing project.
 - c) Discounted cash flow technique takes into account the time value of money.
 - d) The Internal Rate of Return and Net Present value are synonymous terms.
- iii) Which one of the following statements is true?
- a) Profit Volume Ratio indicates the relationship between profit and sales.
 - b) Increase in selling price will have no effect on margin of safety.
 - c) A high margin of safety shows that the actual sales are much more than break-even sales.
 - d) Semi-variable costs are ignored in marginal costing.
- iv) Costs which are pertinent for decision making are termed as:-
- a) Differential costs.
 - b) Past costs.
 - c) Relevant costs.
 - d) Marginal costs.
- v) The following are significant difficulties encountered in stock valuation except:-
- a) The valuation of a stock item.
 - b) Charging units of stock to cost of production or cost of sales.
 - c) The cost of a unit of stock.
 - d) Remuneration of stock valuers.

- vi) Which of the following is not true about a system of integrated accounts?
- a) The financial and cost accounts are combined in one set of ledger accounts.
 - b) There is need to operate cost ledger control accounts.
 - c) There is no need to reconcile the respective cost and financial profits.
 - d) There is no need to operate cost ledger control accounts.
- vii) Which one of the following is not a feature of contract costing?
- a) Work is not undertaken to customers' special requirements.
 - b) The method of costing is similar to job costing.
 - c) The work is frequently constructional in nature.
 - d) A formal contract is made between the customer and supplier.
- viii) In spreadsheets, the contents of the cell can be any of the following except:-
- a) A text.
 - b) Values.
 - c) Formulae.
 - d) A menu.
- ix) An integrated software refers to:-
- a) An off-the-shelf program that can be used for processing of a general type or sometimes a variety of specific uses.
 - b) Software that controls the basic operations of a computer system.
 - c) A program or package of programs that perform a variety of different processing operations.
 - d) Physical devices and components that make up a computer system.
- x) Which of the following is true?
- a) Internal Rate of Return determines the maximum rate of interest that a firm can afford to pay on the borrowings of a particular project.
 - b) Tax concessions have no role to play in estimating the cash flows from a project.
 - c) Depreciation is not considered while calculating the return on a project according to the Accounting Rate of Return method.
 - d) Payback method takes into account the cash flows after the payback period.

The following information relates to questions (xi) – (xv).

Millennium Motors Ltd. has a fleet of company cars for its sales representatives. Running costs have been estimated as follows:-

1. Cars cost Shs. 12m when new and have a guaranteed trade in value of Shs.6m at the end of 2 years. Depreciation is charged on a straight line basis.
2. Petrol and oil cost Shs.5,000 per km.
3. Routine maintenance costs Shs.200,000 per car in the first year and Shs.450,000 in the second year.
4. Repairs average Shs.400,000 per car over two years and are thought to vary with Kms. The average car travels 25,000 km per annum.

- xi) What is the depreciation charge for a year?
- a) Shs. 4m.
 - b) Shs. 3m.
 - c) Shs. 1m.
 - d) Shs. 2m.
- xii) Which of the above running costs are fixed?
- a) Depreciation, Petrol and Oil Cost, and Repairs.
 - b) Depreciation, Petrol and Oil Cost, and Routine Maintenance.
 - c) Depreciation and Routine maintenance.
 - d) Petrol and Oil, and Routine maintenance.
- xiii) What is the value of fixed costs per annum?
- a) Shs. 3,005,000.
 - b) Shs. 3,325,000.
 - c) Shs. 3,000,000.
 - d) Shs. 4,000,000.
- xiv) Which of the above costs are variable?
- a) Depreciation and Repairs.
 - b) Repairs and Routine Maintenance.
 - c) Repairs, and Petrol and Oil.
 - d) Petrol and Oil, and depreciation.

- xv) What is the value of variable costs per annum?
- a) Shs. 5,016.
 - b) Shs. 5,000.
 - c) Shs. 400,000.
 - d) Shs. 600,000.
- xvi) The following are the steps in Rollback Analysis which evaluates the expected value of each decision option except:-
- a) Work from right to left, to the particular decision under consideration.
 - b) Label each decision point and outcome point.
 - c) Work from left to right and calculate expected value at each outcome point.
 - d) Work from right to left and calculate expected values at each outcome point.
- xvii) Which one of the following is a selling and distribution cost?
- a) Insurance of the company's premises.
 - b) Salary of a security guard in the raw material warehouse.
 - c) Holiday pay of machine operators.
 - d) Motor vehicle licences for delivery vans.
- xviii) An organisation using ideal standards for standard costing purposes should expect that:-
- a) Employees will be strongly motivated to work harder and achieve the standards.
 - b) Most variances will be unfavourable.
 - c) A large incentive bonus will have to be paid.
 - d) Most variances will be favourable.
- xix) Which one of the following statements is correct?
- a) Fixing standards is the work of industrial engineers or the production people and not of a cost accountant.
 - b) Variance analysis helps management in taking day-to-day decisions such as make or buy.
 - c) Standard costs are computed after the product is manufactured.
 - d) Budgeting and standard costing are the same.

- xx) Cost reduction involves:-
- a) Keeping costs within limits.
 - b) Reduction in cost on permanent basis.
 - c) Reduction in cost on temporary basis.
 - d) Reduction in cost only done by top management.

SECTION B

Question 2:

- a) State and explain any four features of process costing. **4 marks**
- b) The following information relates to process 3 of a three-stage production process for the month of December 1999.

Opening Stock

1,000 units complete as to:

	%	Shs.(000's)
Materials from process 2	100	8,800
Added materials	90	2,300
Labour	80	1,080
Production overheads	80	<u>1,620</u>
		<u>13,800</u>

In December 1999, a further 1,800 units were transferred from process 2 at a valuation of Shs.54,000,000. Added materials amounted to Shs.13,200,000 and direct labour to Shs. 6,540,000. Production overhead is absorbed at the rate of 15% of direct labour cost.

Closing stock at 31 December 1999 amounted to 900 units complete as to:

Process 2 materials	100%
Added materials	60%
Labour and overheads	50%

SECTION A

Question 1:

- (i) Budgets can be classified according to the following factors except:-
- (a) The Coverage they encompass.
 - (b) The capacity to which they are related.
 - (c) The periods which they cover.
 - (d) The ability to compare actual costs with the standard costs.
- (ii) Which of the following independent situations will not affect a P/V Ratio?
- (a) A decrease in the variable cost per unit.
 - (b) An increase in fixed cost.
 - (c) A decrease in contribution margin.
 - (d) An increase in selling price per unit.
- (iii) Which one of the following statements is correct?
- (a) Normal wastage is avoidable.
 - (b) Wastage can be realised whereas scrap cannot be realised.
 - (c) Abnormal wastage should be part of the cost of production.
 - (d) The cost of primary packing is a part of prime cost whereas cost of secondary packing is a selling and distribution overhead.
- (iv)is calculated by dividing the cost of materials consumed by the cost of average stock held.
- (a) Break-even.
 - (b) Reorder quantity.
 - (c) Material turnover ratio.
 - (d) Lead time.
- (v) Which one of the following statements is false?
- (a) Financial accounts provide information for income determination.
 - (b) Cost accounting is an instrument of management control.
 - (c) Cost accounting is nothing more than a detailed analysis of expenditure.
 - (d) Cost accounting helps in the ascertainment of cost before hand.

- (vi) Profit volume graph is an improvement over the break-even chart because:-
- (a) It shows the relationship of profit to volume of sales.
 - (b) It shows the break-even point.
 - (c) It shows there is no relationship between contribution and sales.
 - (d) The effect of various product mixes on profits cannot be studied from a single break-even chart.
- (vii) In a year in which the closing stock of finished goods is larger than the opening stock.....costing will show a higher profit compared to that under.....costing.
- (a) Absorption, marginal.
 - (b) Differential, absorption.
 - (c) Marginal, absorption.
 - (d) Differential, marginal.
- (viii) In spreadsheets, two windows appear on the screen which are nested one within the other. The smaller window is called:-
- (a) The workbook.
 - (b) Application window.
 - (c) Document window.
 - (d) Menu bar.
- (ix) The system which determines what should be the cost in advance of production is called:-
- (a) Theoretical standard system.
 - (b) Standard costing system.
 - (c) Basic standard system.
 - (d) Post costing system.

Use the following data to answer questions (x) – (xii) below:-

Ndawura, a food vendor in Owino Market vividly recorded the following summary about his business for the period January-February 2000.

Total sales	Shs.150,000.
Variable costs	Shs.75,000.
Fixed costs	Shs.50,000

- (x) Calculate his break-even sales.
- (a) Shs.200,000.
 - (b) Shs.150,000.
 - (c) Shs.100,000.
 - (d) Shs.250,000.
- (xi) Calculate his net profit.
- (a) Shs.25,000.
 - (b) Shs.20,000.
 - (c) Shs.50,000.
 - (d) Shs.70,000.
- (xii) Compute Ndawura's margin of safety.
- (a) Shs.30,000.
 - (b) Shs.50,000.
 - (c) Shs.20,000.
 - (d) Shs.15,000.
- (xiii) Which of the following statements is true?
- (a) There are no mathematical techniques available for dealing with risk and uncertainty factors involved in determining future cashflows from a project.
 - (b) Tax concessions have no role to play in estimating the cashflows from a project.
 - (c) Payback method takes into account the cashflows after the payback period.
 - (d) Cashflows from a project can be worked out only on the basis of certain probabilities.
- (xiv) The costing method in which fixed factory overheads are added to inventory is called:-
- (a) Absorption costing.
 - (b) Prime costing.
 - (c) Differential costing.
 - (d) Break-even analysis.

- (xv) In marginal costing, stock of finished goods is valued at.....cost.
- (a) Direct.
 - (b) Marginal.
 - (c) Break-even.
 - (d) Variable.
- (xvi) The concept of learning curve states that time required for repeated performance is.....the time required to perform it originally.
- (a) Greater than.
 - (b) Equal.
 - (c) Less than.
 - (d) Within.
- (xvii) Cost reduction involves:-
- (a) Reduction in costs on permanent basis.
 - (b) Keeping costs within limits.
 - (c) Reduction in costs on temporary basis.
 - (d) Recognition that there is no room for reduction in cost.
- (xviii) Cost accounting mainly helps management in:-
- (a) Earning extra profits.
 - (b) Fixing prices of the products.
 - (c) Providing information to management for decision-making.
 - (d) Preparation of financial statements.
- (xix) The basic function of management accounting is to:-
- (a) Record all business transactions.
 - (b) Interpret the financial data.
 - (c) Record economic data.
 - (d) Assist the management in performing its functions effectively.
- (xx) The computer as a machine and related equipment used in an electronic data processing system are called:-
- (a) Software.
 - (b) CPU.
 - (c) EDP.
 - (d) Hardware.

SECTION A

Question 1

- (i) A company's summary of costs and productivity data for each class of workers is part of its:
- (a) Overhead cost analysis.
 - (b) Labour cost analysis.
 - (c) Services cost analysis.
 - (d) Production or service strategy.
- (ii) The point at which the total of the product sales profit contributions exactly equals a company's fixed costs is known as the:
- (a) Contribution margin.
 - (b) Overhead rate.
 - (c) Level of maximum profits.
 - (d) Breakeven point.
- (iii) The sum of raw materials cost, direct labour and allocated overhead expenses is the:
- (a) Prime cost.
 - (b) Fixed cost.
 - (c) Production cost.
 - (d) Inventory cost.
- (iv) The usage rate of raw materials multiplied by production requirements yields an estimate of:
- (a) Inventory needs.
 - (b) Production costs.
 - (c) Raw materials requirements.
 - (d) Inventory value.
- (v) What level of planning are departmental managers generally responsible for?
- (a) Strategic planning.
 - (b) Operational planning.
 - (c) Tactical planning.
 - (d) Directional planning.
- (vi) A manufacturing firm is very busy and overtime is being worked. The amount of overtime premium contained in direct wages is classified as:
- (a) Part of prime cost.
 - (b) Factory overhead.
 - (c) Direct labour cost.
 - (d) Administrative overheads.

- (vii) Which of the following statements is false?
- (a) All service costs are indirect as far as units are concerned.
 - (b) The absorption of non-production overheads into production units helps control the cost.
 - (c) Some costs can be both a direct departmental cost and an indirect unit cost.
 - (d) Some service costs are included in unit costs.
- (viii) The following are involved in installing a cost accounting system except:
- (a) The acquisition of modern and efficient machines.
 - (b) The creation of an organizational structure.
 - (c) The selection of a product costing system.
 - (d) The choice of an appropriate cost control method.
- (ix) Which of the following is not a holding cost in Inventory Management?
- (a) Disposal cost.
 - (b) Interest on capital.
 - (c) Theft.
 - (d) Ordering cost.
- (x) Over-absorbed overheads occur when:
- (a) Absorbed overheads exceed actual overheads.
 - (b) Absorbed overheads exceed budgeted overheads.
 - (c) Actual overheads exceed budgeted overheads.
 - (d) Budgeted overheads exceed absorbed overheads.
- (xi) Idle capacity may be a result of the following avoidable reasons except:
- (a) Lack of demand.
 - (b) Lack of management planning.
 - (c) Lack of control.
 - (d) Change over of jobs.
- (xii) The process of cost apportionment is carried out so that:
- (a) Costs may be controlled.
 - (b) Cost units gather overheads as they pass through cost centres.
 - (c) Whole items of cost can be charged to cost centres.
 - (d) Common costs are shared among cost centres.

- (xiii) Which of the following best describes the term ‘equivalent units’ under FIFO?
- (a) The number of units worked on during a period including the opening and closing units.
 - (b) The number of whole units worked on during the period ignoring the levels on completion of opening and closing units.
 - (c) The number of effective whole units worked on during a period allowing for levels of completion of opening and closing units.
 - (d) The total number of whole units started during the period, ignoring the opening stock units as these were started in the previous period.
- (xiv) Which of the following statements is false?
- (a) The absorption of non-production overheads into production units helps control the cost.
 - (b) Some costs can be both a direct departmental cost and an indirect unit cost.
 - (c) All service costs are indirect as far as units are concerned.
 - (d) Some service costs are included in unit costs.

The information below relates to Tidings Ltd. for the year 2004.

No. of units sold: 10,000.

	Per Unit	Total
	Shs.	Shs. '000
Sales	300	3,000
Less: Variable costs	<u>180</u>	<u>1,800</u>
Contribution	120	1,200
Less: Fixed costs		<u>240</u>
Profit		<u>960</u>

Use the above data to answer questions (xv) to (xviii).

- (xv) Calculate the breakeven point in value terms.
- (a) Shs. 1,200,000.
 - (b) Shs. 700,000.
 - (c) Shs. 600,000.
 - (d) Shs. 1,000,000.
- (xvi) Calculate the breakeven point in units.
- (a) 4,000 units.
 - (b) 20,000 units.
 - (c) 40,000 units.
 - (d) 30,000 units.

- (xvii) Calculate the margin of safety in value terms.
- (a) Shs. 2,000,000.
 - (b) Shs. 4,000,000.
 - (c) Shs. 4,800,000.
 - (d) Shs. 2,400,000.
- (xviii) Calculate the margin of safety in units.
- (a) 80,000 units.
 - (b) 70,000 units.
 - (c) 60,000 units.
 - (d) 90,000 units.
- (xix) Standard costs are:
- (a) Ideal costs.
 - (b) Normal costs.
 - (c) Average costs.
 - (d) Reasonably attainable costs.
- (xx) The difference between fixed and variable costs has a special significance in the preparation of:
- (a) Flexible budget.
 - (b) Master budget.
 - (c) Cash budget.
 - (d) Budget manual.

SECTION B

Question 2

- (a) Define the following terms:
- (i) Variance. **(1 mark)**
 - (ii) Ideal Standard. **(1 mark)**
 - (iii) Attainable Standard. **(1 mark)**
- (b) Explain three major benefits of Budgets to an organization. **(6 marks)**
- (c) Outline four possible human relations problems caused by budgets. **(4 marks)**
- (d) Distinguish between Economic Order Quantity (EOQ) and Economic Batch Quantity (EBQ). **(4 marks)**
- (e) Define avoidable, controllable and sunk costs. **(3 marks)**
- (Total 20 marks)**

SECTION A

Question 1

- (i) A traditional method of evaluating investment projects which expresses the profit from an investment as a percentage of the Investment is called:
- (a) Pay back.
 - (b) Accounting rate of return.
 - (c) Present value.
 - (d) Net Present Value.
- (ii) Inventories comprise the following:
- (a) Raw materials, work in progress, components and finished goods.
 - (b) Raw materials, waste and work in progress.
 - (c) Purchases, components and waste.
 - (d) Obsolete inventory, packages and raw materials.
- (iii) Which of the following are not quantitative factors which influence make or buy decisions?
- (a) Quality of goods supplied.
 - (b) Uninterrupted supply of goods.
 - (c) The price of the supplier.
 - (d) The secrecy of manufacturing know-how.
- (iv) is a product which is recovered incidentally from the material used in the manufacturing of recognized main product.
- (a) Component.
 - (b) By-product.
 - (c) Joint product.
 - (d) Finished product.
- (v) The plant capacity which gives maximum possible capacity achievable without operating interruptions is called:
- (a) Practical capacity.
 - (b) Theoretical capacity.
 - (c) Idle capacity.
 - (d) Normal capacity.
- (vi) If are the reward of, is a reward of
- (a) capital, labour, interest, wages
 - (b) wages, capital, labour, interest
 - (c) wages, labour, capital, interest
 - (d) wages, labour, interest, capital

- (vii) If an expense can be linked with a specific cost unit then it is treated as:
- (a) Fixed.
 - (b) Direct.
 - (c) Indirect.
 - (d) Variable.
- (viii) Which of the following statements is false?
- (a) In time wage system, the worker does not get any reward for the time saved.
 - (b) In the piece work system, the worker gets full payment for the time saved.
 - (c) In the premium plan, the worker does not get payment for the time saved.
 - (d) In the premium plan, both the worker and the employer share the labour cost of the time saved.
- (ix) If product designing is undertaken for introducing a new product on a commercial basis, the cost of design should be charged:
- (a) to the customer's order.
 - (b) in installments over a number of years as part of research and development.
 - (c) to the designer's management fees.
 - (d) to the product cost.
- (x) The price is the basic standard price which has been adjusted to provide for permanent changes in cost on account of trends in the market.
- (a) current standard.
 - (b) future standard.
 - (c) basic standard.
 - (d) historical standard.

Use the following data to answer questions (xi) – (xv):

A company manufactures television sets and employs a standard costing system. The standard cost per set is shown below:

	Shs
Direct materials	
5 plastic sheets at Shs 2,000 per sheet	10,000
Copper wire 3 spools at Shs 3,000 per spool	9,000
Direct labour 4 hours at Shs 7,000 per hour	28,000
Variable overhead 4 hours at Shs 3,000 per hour	12,000
Fixed overhead 4 hours at Shs 2,000 per hour	<u>8,000</u>
	<u>67,000</u>

Overhead rates were based upon normal and expected monthly capacity which were 4,000 direct labour hours. Practical capacity is however 5,000 direct labour hours per month.

During the month, 800 TV sets were produced and the following costs were incurred:

Direct materials	Quantity purchased	Quantity used
Plastic	5,000 sheets at Shs 2,000 per sheet	3,900 sheets
Copper	2,200 spools at Shs 3,100 per spool	2,600 spools

Direct labour:

2,000 hours at Shs 7,000.

1,400 hours at Shs 7,200.

Overhead expenditure:

Variable overheads Shs 10,000,000.

Fixed overheads Shs 8,800,000

- (xi) Calculate the total material usage variance:
- (a) Shs. 200,000 A.
 - (b) Shs. 400,000 A.
 - (c) Shs. 600,000 A.
 - (d) Shs. 800,000 A.
- (xii) The labour rate variance is:
- (a) Shs. 280,000 A.
 - (b) Shs. 340,000 A.
 - (c) Shs. 1,680,000 A.
 - (d) Shs. 2,440,000 A.
- (xiii) The variable overhead expenditure variance is:
- (a) Shs. 200,000 F.
 - (b) Shs. 400,000 A.
 - (c) Shs. 600,000 A.
 - (d) Shs. 1,600,000 A.
- (xiv) The expenditure variance for fixed overheads is:
- (a) Shs. 2,400,000 A.
 - (b) Nil.
 - (c) Shs. 800,000 A.
 - (d) Shs. 1,000,000 F.

- (xv) The fixed overhead volume variance is:
- (a) Shs. 400,000 A.
 - (b) Shs. 2,200,000 A.
 - (c) Shs. 2,400,000 A.
 - (d) Shs. 1,600,000 A.
- (xvi) Production may be continued even if the selling price is below the marginal cost in the following circumstances except when:
- (a) a new product is introduced in the market.
 - (b) closure of business means loss of business connections.
 - (c) employees are retrenched.
 - (d) the goods are of a perishable nature.
- (xvii) The provides the information about the materials to be acquired from the market during the budget period.
- (a) material procurement budget.
 - (b) material requirement budget.
 - (c) production budget.
 - (d) plant utilization budget.
- (xviii) The following are the causes of labour efficiency variance except:
- (a) emergency purchases.
 - (b) ineffective supervision.
 - (c) poor quality of materials.
 - (d) poor working conditions.
- (xix) The following factors relate to the technical feasibility aspect of a project except:
- (a) technology used.
 - (b) sources of finance.
 - (c) location of the project.
 - (d) construction and installation schedules.
- (xx) Which of the following is not the responsibility of a management accountant?
- (a) Installing a cost audit system.
 - (b) Preparation of financial statements.
 - (c) Educating the executive of the need for control.
 - (d) Continuous appraisal of economic and social forces.

SECTION A

Question 1

- (i) Which of the following activities best describes a cost driver?
- (a) Any activity, which causes an increase in costs.
 - (b) A collection of costs associated with a particular activity.
 - (c) A cost that varies with production levels.
 - (d) Any factor which causes a change in the cost of an activity.
- (ii) Which of the following is not a principal budget factor?
- (a) Cash.
 - (b) Sales demand.
 - (c) Machine capacity.
 - (d) Selling price.
- (iii) Which of the following is not a technique for inventory control?
- (a) FIFO method.
 - (b) Just in Time (JIT).
 - (c) Economic Order Quantity (EOQ).
 - (d) Materials Requirement Planning (MRP).
- (iv) Which of the following is **NOT** a cause of labour variance?
- (a) Higher rate of pay.
 - (b) Grading of labour.
 - (c) Wastage of materials by workers.
 - (d) Labour idle time.
- (v) Which of the following is **NOT** a qualitative factor that influences the make or buy decisions?
- (a) Quality of goods supplied by supplier.
 - (b) Uninterrupted supply by supplier.
 - (c) Size of goods supplied by supplier.
 - (d) Adverse effects on labour relations.

Use the following data to answer questions (vi) - (x)

Shah Limited had the following information extracted from its management accounts for the period ended 31 December 2006:

Fixed costs for the period	Shs 60,000,000
Selling price	Shs 20,000 per unit
Variable cost	Shs 10,000 per unit
Existing sales	8,000 units
Relevant range of output	4,000 – 12,000 units

- (vi) Calculate the break-even point in units.
- (a) 6,000.
 - (b) 7,000.
 - (c) 10,000.
 - (d) 4,000.
- (vii) Calculate the P/V ratio.
- (a) 0.83.
 - (b) 1.25.
 - (c) 0.50.
 - (d) 1.67.
- (viii) Calculate the break-even point in Shillings.
- (a) Shs 72,000,000.
 - (b) Shs 48,000,000.
 - (c) Shs 36,000,000.
 - (d) Shs 120,000,000.
- (ix) If a profit of Shs 10 million is planned, how many units should be sold to make the plan possible?
- (a) 6,000.
 - (b) 7,000.
 - (c) 10,000.
 - (d) 4,000.
- (x) If expected sales amount to 10,000 units, calculate the margin of safety.
- (a) 25%.
 - (b) 40%.
 - (c) 50%.
 - (d) 14%.
- (xi) Which of the following is **NOT** a responsibility of a cost accountant?
- (a) Cost control.
 - (b) Inventory control.
 - (c) Budgeting.
 - (d) Sourcing for finance.

- (xii) Which of the following is **NOT** involved in the valuation of inventories?
- (a) Physical counting of inventory.
 - (b) Use of personnel for inventory counting other than those working in the store.
 - (c) Attaching value to inventory items based on the principle of the lower of cost and net realizable value.
 - (d) Receiving goods into store.
- (xiii) Which costing system is suitable where the customer has quoted a special specification of a task?
- (a) Job costing.
 - (b) Process costing.
 - (c) Batch costing.
 - (d) Standard costing.
- (xiv) Which cost accounting system separates the reporting of cost accounts from financial accounts?
- (a) Interlocking cost accounts.
 - (b) Cost ledger control accounts.
 - (c) Finished ledger control accounts.
 - (d) Integrated cost accounts.
- (xv) The term used to measure inventory at which a replenishment order should be made is referred to as:
- (a) economic order quantity.
 - (b) margin of safety.
 - (c) inventory order level.
 - (d) reorder level.
- (xvi) Which of the following is **NOT** a characteristic of spreadsheets?
- (a) Performance of mathematical expressions.
 - (b) Data is represented in rows and columns.
 - (c) Take into account qualitative factors.
 - (d) When writing an expression only one cell is affected.
- (xvii) Which of the following budgets adjusts to the changes in the different cost behaviours and changes in volumes of output?
- (a) Rolling budget.
 - (b) Moving budget.
 - (c) Flexible budget.
 - (d) Standard budget.

- (xviii) A standard based on existing working conditions is referred to as:
- (a) ideal standard.
 - (b) current standard.
 - (c) basic standard.
 - (d) attainable standard.
- (xix) In job costing, if rectification is regarded as a normal part of the work carried out in the department, the correct way of treating rectification costs is to:
- (a) add them to material costs.
 - (b) charge them as a direct cost to the job.
 - (c) treat them as production overheads.
 - (d) deduct them from production costs.
- (xx) Which of the following is **FALSE** about the split-off point?
- (a) Various products become identifiable.
 - (b) Subsequent to the split-off point, any costs incurred can be identified.
 - (c) Up to the split-off point all costs are joint costs.
 - (d) Subsequent costs after split-off pose costing problems.

SECTION B

Question 2

- (a) To what extent is coordination of budgets a role of a budget committee?
(6 marks)
- (b) Briefly identify the characteristics of the process costing method.
(5 marks)
- (c) Distinguish between sunk costs and opportunity cost.
(4 marks)
- (d) Explain the term "abnormal loss" in process costing and outline its probable causes.
(5 marks)
- (Total 20 marks)**

Question 3

- (a) Explain the motives of holding inventory.
(6 marks)
- (b) Explain the term "spreadsheets" and identify their functions.
(4 marks)

SECTION A

Question 1

- (i) Management Accounting is:
- (a) concerned with the provision of information to people within the organisation to help them make better decisions.
 - (b) concerned with the provision of information to external parties outside the organisation.
 - (c) concerned with the provision of information to help people within an organisation and to external parties to show performance trends.
 - (d) is concerned with cost accumulation for stock valuation to meet the requirements of internal reporting.
- (ii) The following characteristics are true of "Jobbing Shop Production":
- (a) Products are made to meet customer demands.
 - (b) Products are especially made to meet requirements of individual customers.
 - (c) The manufacturer maintains stocks of components or finished products.
 - (d) There are medium-volume production runs of medium range of standardised products.
- (iii) What is a cost centre?
- (a) a measure of output in standard units per centre.
 - (b) where managers are accountable for sales revenue and expenses.
 - (c) where managers are responsible for some capital investment decision and thus influence the size of the investment.
 - (d) where managers are accountable for the expenses that are under their control.
- (iv) In determining 'Costs for Stock Valuation', which of the following is **not** a possible method of cost classification?
- (a) Period and products costs.
 - (b) Elements of manufacturing costs.
 - (c) Cost behaviour.
 - (d) Job and process costs.

Information for Questions (iv) to vii

Jix Ltd. manufactures a single product, the budgeted selling price and variable cost details are as follows.

	Shs.
Selling price:	15,000
Variable costs per unit	
Direct materials	3,500
Direct Labour	4,000
Variable overhead	2,000

Budgeted fixed overhead costs are UShs. 60m/- p.a. charged at a constant rate each month. Budgeted production is 30,000 units per annum.

- (v) What is the budgeted total cost per unit?
- (a) Shs. 11,500.
 - (b) Shs. 9,500.
 - (c) Shs. 5,500
 - (d) None of these.
- (vi) What would be the gross profit under absorption costing?
- (a) Shs. 7,570,000
 - (b) Shs. 7,770,000
 - (c) Shs. 13,750,000
 - (d) Shs. 5,500,000
- (vii) Following the statement in question (vi) above, calculate the (under) /over absorption of overheads.
- (a) (Shs. 560,000)
 - (b) Shs. 200,000.
 - (c) Nil.
 - (d) (Shs. 200,000).

Data for Questions (viii) to (xi).

Kajumba Ltd. manufactures a single product the selling price and costs are as follows.

	Shs. per Unit.
Selling Price	18,000
Direct materials	7000
Variable overheads	2000
Fixed overheads	2000

Expected production volume - 15,000 units.

- (viii) The Breakeven point of Kajumba Ltd is
- (a) 8000 units.
 - (b) Shs. 135m/- revenue.
 - (c) Shs. 90m/- revenue.
 - (d) 4500 units.

- (ix) The Company's expected margin of safety is
- a) 33%
 - b) 67%
 - c) Shs. 90m/= revenue
 - d) 10.000 units.
- (x) If Kajumba Ltd wants a profit of U Shs. 9m/=-, how many visits must be sold?
- (a) 6500 units.
 - (b) 5000 units.
 - (c) 15000 units.
 - (d) 9750 units.
- (xi) If all costs increase by 10% but selling prices remain unchanged by how much must sales change from the original expected volume (15000 units) to achieve a profit of U Shs. 9m/=-.
- (a) 45.8% decrease.
 - (b) 54.2% decrease.
 - (c) 58.3% decrease.
 - (d) 41.7% decrease.
- (xii) A job carries a monthly salary of U.Shs. 1m/= payable in arrears. The net present value now of next year's salary, assuming an annual rate of interest of 12% is:
- (a) Shs. 9,470,000/=
 - (b) Shs. 8,900,000/=
 - (c) Shs. 11,260,000/=
 - (d) Shs. 10,370,000/=

Data for questions (xiii) -(xv):

John Bosco Plc manufactures and sells sweets. The sweets are sold in packet units, with each packet unit costing Shs. 600/= Estimates of demand and sales are as follows:-

Variable Cost per unit Shs.	Probability	Demand packet units	Probability
300	0.1	5000	0.3
350	0.3	6000	0.6
400	0.5	8000	0.1
450	0.1		

The unit variable costs do not depend on the volume of sales and fixed costs are estimated to be U. Shs. 1,000,000/=.

(xiii) The expected value (EV) of demand is:-

- (a) 9,500 units.
- (b) 5,900 units.
- (c) 19,000 units.
- (d) 6,300 units.

(xiv) The expected value (EV) of the variable cost per packet unit is

- (a) Shs. 400/=
- (b) Shs. 375/=
- (c) Shs. 1500/=
- (d) Shs. 380/=

(xv) The expected profit is:-

- (a) Shs. 298,000/=
- (b) Shs.12,980,000/=
- (c) Shs.1,090,000/=
- (d) Shs.327,500/=

- (xvi) The following statement is true of a mode.
- (a) The mode is the value of the middle member of an array.
 - (b) The mode of a grouped frequency distribution can not be estimated approximately.
 - (c) The mode is the most frequently occurring value.
 - (d) The mode is the best known type of average and is widely understood. It is also used for further statistical analysis.
- (xvii) The most important measure of spread used in statistics is:-
- (a) mean deviation.
 - (b) standard deviation.
 - (c) quartile deviation.
 - (d) inter quartile range.
- (xviii) What is the present value of Shs. 60m/- at year 6 if a return of 15% per annum is obtainable.
- a) Shs. 69,000,000
 - b) shs. 54,000,000
 - c) Shs. 60,000,000
 - d) Shs. 25,920,000

Data for questions (xix) and (xx).

The budgeted sales of Product Y in January 1998 was 2400 units. Gonzaga Ltd. the company which manufactures product Y uses a standard costing system, and the standard cost per unit of Product Y is Shs. 210/=. The company recorded the following variances for the month of January 1998.

Sales price variance	U Shs. 3,000 (A)
Sales volume profit variance	U Shs. 12,000(F)

During January 1998 2,700 units were actually sold.

- (xix) What was the budgeted Profit for Product Y in January 1998?
- (a) U Shs. 96,000=
 - (b) U Shs. 12,000=
 - (c) U Shs 108,000=
 - (d) U Shs. 72,000=
- (xx) What was the actual sales revenue for Product Y in January 1998.
- (a) U Shs. 576,000=
 - (b) U Shs. 675,000=
 - (c) U Shs. 672,000=
 - (d) U Shs. 670,000=

SECTION A

Question 1

- (i) Which of the following budgets are not classified according to time?
- (a) Flexible budgets.
 - (b) Rolling budgets.
 - (c) Current budgets.
 - (d) Long-term budgets.
- (ii) In marginal costing are met against the total fund arising out of excess of selling price over total variable cost.
- (a) prime costs.
 - (b) variable costs.
 - (c) fixed costs.
 - (d) factory costs.
- (iii) is the written authorization to the supplier to supply particular materials.
- (a) Purchase requisition.
 - (b) Tender form.
 - (c) Purchase order.
 - (d) Bill of payment.
- (iv) The following are preventive costs of labour turnover except:
- (a) costs of provision of good working conditions
 - (b) costs of provision of welfare facilities.
 - (c) costs of recruitment of new workers.
 - (d) costs of provision of factory safety measures.
- (v) The following are demerits of centralized stores except:
- (a) better layout of stores.
 - (b) delays and inconveniences are caused to departments.
 - (c) greater risk of loss is possible.
 - (d) transportation costs may be increased.

Use the information above to answer questions (vi) – (xi):

Afes Ltd. manufactures two types of products: Pines and Bines. Pines take 10 hours to make while Bines take 20 hours. During May 2005, 500 units of Pines and 300 units of Bines were produced. Total budgeted hours were 8,500 hours. The factory employs 50 men and there were 22 working days of 8 hours each during the month.

- (vi) Calculate the standard hours for actual production of Pines.
 - (a) 3,000 hours.
 - (b) 5,000 hours.
 - (c) 6,000 hours.
 - (d) 1,000 hours.
- (vii) Calculate the standard hours for actual production of Bines.
 - (a) 3,000 hours.
 - (b) 5,000 hours.
 - (c) 4,000 hours.
 - (d) 6,000 hours.
- (viii) Calculate the standard hours for actual production of both products.
 - (a) 8,500 hours.
 - (b) 11,000 hours.
 - (c) 10,000 hours.
 - (d) 9,000 hours.
- (ix) Calculate the actual hours worked by the 50 men.
 - (a) 8,500 hours.
 - (b) 8,800 hours.
 - (c) 10,000 hours.
 - (d) 11,000 hours.
- (x) Calculate the activity ratio.
 - (a) 103.5%
 - (b) 105%
 - (c) 100%
 - (d) 129%
- (xi) Calculate the capacity ratio.
 - (a) 103.5%
 - (b) 100.9%
 - (c) 129%
 - (d) 100%

- (xii) Which of the following is false?
- (a) Cashflows from a project can be computed only on the basis of certain probabilities
 - (b) IRR determines the maximum rate of interest that a company can afford to pay on its borrowings for a project.
 - (c) While calculating the return on a project, depreciation is considered according to the ARR method.
 - (d) Tax concessions have no role to play in estimating the cashflows from an investment project.
- (xiii) Which of the following is true?
- (a) The basis of apportionment of cost of stores services is the number of employees.
 - (b) The basis of apportionment of crèche expenses is number of hours worked.
 - (c) The basis of apportionment of depreciation of plant is the machine hours in each production department.
 - (d) The basis of apportionment of welfare department expenses is wages paid to the department.
- (xiv) The various objectives for which research and development is carried out include the following except:
- (a) To acquire better know-who.
 - (b) To find new uses for products.
 - (c) To explore possibilities of a larger market.
 - (d) To improve the existing processes and products.
- (xv) When materials are returned to the supplier, the accounting entry is to the General Ledger Adjustment Account andthe Stores Ledger Control Account.
- (a) Credit, debit.
 - (b) Debit, credit.
 - (c) Debit, debit.
 - (d) Credit, credit.
- (xvi) The following are standing costs in transport costing except:
- (a) Fuel expenses.
 - (b) Salary of inspector.
 - (c) Insurance of vehicle.
 - (d) Licence fees.

- (xvii) In process costing, when 1000 units are 70% complete in a process, it is equivalent to completed units.
- (a) 600 units.
 - (b) 800 units.
 - (c) 1,000 units.
 - (d) 700 units.
- (xviii) The most important criterion for distinguishing between scrap, by-product and joint products is the of the products.
- (a) Material ratio.
 - (b) Replacement cost.
 - (c) Relative sales value.
 - (d) Standard cost.
- (xix) A planning and budgeting process which requires every manager to justify his entire budget request in detail from scratch is called:
- (a) Cash budget.
 - (b) Flexible budget.
 - (c) Zero base budgeting.
 - (d) Responsibility budgeting.
- (xx) Which of the following is not the responsibility of a management accountant?
- (a) Planning.
 - (b) Controlling.
 - (c) Coordinating.
 - (d) Litigation.

SECTION B

Question 2

- (a) Define the terms Management Accounting and Financial Accounting. **(4 marks)**
- (b) Outline any four characteristics of an Ideal Cost Accounting. **(4 marks)**
- (c) Give two advantages of Management Accounting to:
- (i) Management.
 - (ii) Workers.
 - (iii) Government.

(12 marks)
(Total 20 marks)

SECTION A

Question 1

- (i) A master budget consists of the following **EXCEPT**:
- (a) cash flow statement.
 - (b) labour turn over.
 - (c) budgeted profit and loss statement.
 - (d) balance sheet.

Use the information provided below to answer questions (ii) and (iii):

2000 kg of material are issued to production process. Normal loss is expected to be 5%. Actual production was 1,500 kg in period 1 and 1,950 kg in period 2.

- (ii) For period 1, there was
- (a) abnormal gain of 400 kg.
 - (b) abnormal loss of 400 kg.
 - (c) abnormal gain of 50 kg.
 - (d) abnormal loss of 50 kg.
- (iii) For period 2, there was
- (a) abnormal gain of 50 kg.
 - (b) abnormal loss of 50 kg.
 - (c) abnormal gain of 400 kg.
 - (d) abnormal loss of 400 kg.
- (iv) When ordering for large quantities where a discount is expected the following costs are minimized **EXCEPT**:
- (a) total material costs.
 - (b) operational costs.
 - (c) ordering costs.
 - (d) inventory holding costs.
- (v) Period costs are those that are:
- (a) for purchases during the period.
 - (b) deducted as expenses.
 - (c) identified with goods produced.
 - (d) identified with sales of the product.

(vi) An investment has a net present value of Shs 2 million at a discount rate of 20% and a net present value of – Shs 0.8 million at a discount rate of 30%. The internal rate of return is:

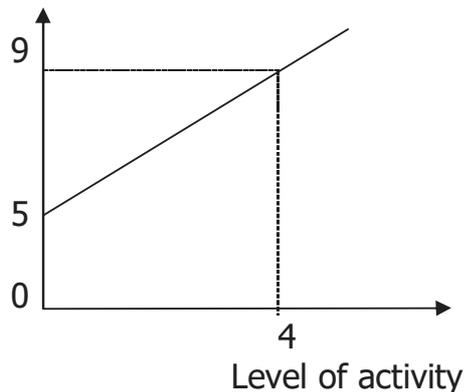
- (a) 12.86%.
- (b) 27.14%.
- (c) 50%.
- (d) 28%.

(vii) The first stage in the decision making process should be to:

- (a) compare actual and planned outcomes.
- (b) gather data about alternative course of action.
- (c) specify the objectives of an organisation.
- (d) implement decisions.

(viii) The graph below shows total costs (million shillings) versus level of activity (units, in thousands).

Total cost



The variable cost per unit is:

- (a) Shs 1,250.
 - (b) Shs 2,250.
 - (c) Shs 4,000.
 - (d) Shs 1,000.
- (ix) The total cost that should be expected if the output is 6,000 units is:
- (a) Shs 65 million.
 - (b) Shs 11 million.
 - (c) Shs 6 million.
 - (d) Shs 10 million.

(x) The following are features of process costing that distinguish it from job costing **EXCEPT:**

- (a) repetition.
- (b) presence of losses.
- (c) joint products.
- (d) progressive payments.

(xi) Contract No KI, which is nearing completion had the following information:

- Cost of sales Shs 12 million.
- Work done but not yet certified Shs 0.8 million.
- Total contract cost Shs 50 million.
- Estimated total profit on contract Shs 20 million.

Using the data above, calculate the profit on the contract.

- (a) Shs 11.2 million.
- (b) Shs 2.51 million
- (c) Shs 5.12m
- (d) Shs 8.8m

(xii) Which of the following is correct about inventory control levels?

- (a) Maximum level = reorder level – reorder quantity – (minimum usage x minimum lead time).
- (b) Maximum level + reorder level – reorder quantity = minimum usage x minimum lead time.
- (c) Maximum level = reorder level + (average usage x average lead time).
- (d) Reorder level = maximum level – reorder quantity + (minimum usage x minimum level time).

Use the data provided below to answer questions (xiii) to (xv):

MUTI Ltd extracted the following data from their management accounts:

Budgeted labour hours	3,000
Actual labour hours worked	2,400
Standard hours actually produced	3,200

(xiii) The activity ratio is:

- (a) 106.7
- (b) 75.0
- (c) 133.3
- (d) 80.0

(xiv) The capacity ratio is:

- (a) 12.5
- (b) 75.0
- (c) 80.0
- (d) 125.0

(xv) The efficiency ratio is:

- (a) 12.5
- (b) 80.0
- (c) 75.0
- (d) 133.3

(xvi) DEGE Ltd sells chemical COTIN at Shs 6,000 per tin. The variable production cost per tin is Shs 1,200.

At the budgeted activity level of 6,000 tins, fixed production costs are Shs 4,000 per tin and fixed selling costs are Shs 3,500 per tin.

If the variable unit selling costs are Shs 800, calculate the break even point .

- (a) 90,000
- (b) 45,000
- (c) 40,000
- (d) 5,000

(xvii) An investment method that is used to measure the maximum cost of capital to finance a project is called:

- (a) payback period.
- (b) internal rate of return.
- (c) average return.
- (d) net present value.

(xviii) A system which enables managers concentrate on significant deviations from expected results is called:

- (a) management by objectives (MBO).
- (b) time management technique (TMT).
- (c) management by walking around (MBWA).
- (d) management by exception (MBE).

- (xix) In job costing, if rectification is regarded as normal part of the work carried out in the department, the correct way of treating rectification costs is to:
- (a) add them to material costs.
 - (b) charge them as a direct cost to the job.
 - (c) treat them as production overheads.
 - (d) deduct them from production costs.
- (xx) A principal budget factor is:
- (a) the biggest item of expenditure in a budget.
 - (b) anything that restricts the budgeted level of activity.
 - (c) management itself.
 - (d) the allowance for inflation while budgeting.

SECTION B

Question 2

- (a) State any **four** ways by which costs may be classified. **(4 marks)**
- (b) The cost accountant of NGONI Ltd, which manufactures a single product, supplied the following data:
- | | |
|---|-----------------------------|
| Variable production costs | Shs 500 per unit |
| Selling price | Shs 1,200 per unit |
| Fixed selling and administration overhead | Shs 1.8 million per quarter |
| Fixed production overhead | Shs 3 million per quarter |
| Normal capacity | 30,000 units per quarter |
| Production in quarter 1 | 28,000 units |
| Sales | 25,000 units |
- There was no opening inventory.
- Required:**
- Calculate:
- (i) Absorption costing profit for the quarter. **(7 marks)**
 - (ii) Marginal costing profit for the quarter **(6 marks)**
- (c) List **three** factors to be taken into account when selecting appropriate cost centres for an organisation. **(3 marks)**

(Total 20 marks)

SECTION A

Question 1

- (i) Which of the following is not a cause of stock out costs?
(a) Labour frustration over stoppages.
(b) Interest on stocks held.
(c) Extra costs of urgent, small quantity, replenishment orders
(d) Loss of customer goodwill.
- (ii) The following statement is a feature of job costing:-
(a) costs are charged over the units produced in the period.
(b) establishes the cost of services rendered.
(c) associated with continuous production of large volumes of low-cost items.
(d) production is carried out in accordance with the wishes of the customer.
- (iii) Which of the following statements is/are true in connection with process costing?
1. An unexpected loss is an abnormal loss.
2. A loss expected during normal course of operations for unavoidable reasons is abnormal loss.
3. An abnormal loss arises if the actual loss is greater than the expected loss.
4. A normal loss is never less than actual loss.
(a) 1 and 2.
(b) 2 and 3.
(c) 1 and 4.
(d) 2 and 4.
- (iv) Which of the following organisations should not be advised to use service costing?
(a) A light engineering company.
(b) A distribution service.
(c) Hospital.
(d) Maintenance division of a manufacturing company.
- (v) Calculate the most appropriate unit cost for a distribution division of a multinational company using the following information:

Kilometers travelled	656,500
Tons carried	2,479
No. of drivers	20
Hours worked by drivers	35,520
Ton/Kms carried	375,200
Costs incurred	Shs 562,800,000

- (a) Shs 28,140,000.
(b) Shs 880.
(c) Shs 15,840.
(d) Shs 1,500.

- (vi) TimLtd. had budgeted to produce 500 units of product X at a labour cost of Shs 8,000,000/= in May 1999 but produced only 480. For the purpose of budgetary control, what figure would be compared against the actual direct labour cost incurred of Shs 7,500,000/=?
- (a) Shs 7,500,000/=
 - (b) Shs 8,000,000/=
 - (c) Shs 7680,000/=
 - (d) Shs 6,780,000/=
- (vii) A trade discount is:-
- (a) a reduction in price per unit given to some customers.
 - (b) A special sales promotion.
 - (c) A discount for early payment.
 - (d) The reduction of overhead costs per unit as production increases.
- (viii) There are 27,500 units of Engine Part No 3E on order with supplies and 16,250 units outstanding on existing customer orders. If the Free Stock is 13,000 units, what is the physical stock?
- (a) 3,250.
 - (b) 1,750.
 - (c) 14,000.
 - (d) 29,250.

Data for Questions (ix) & (x)

B.P.Ltd makes the following purchases and sales:

1 January	Purchases	4000 units for Shs 10,000,000
31 January	Purchases	1000 units for Shs 2,000,000
15 February	Sales	3000 units for Shs 13,000,000
28 February	Purchases	1500 units for Shs 3,750,000
14 March	Sales	500 units for Shs 1,200,000

- (ix) Which of the following valuations using FIFO is correct as at 31 March?
- (a) Shs 6,500,000.
 - (b) Shs 7,000,000.
 - (c) Shs 7,500,000.
 - (d) Shs 8,000,000.
- (x) At 31 March which of the following valuations using LIFO is correct?
- (a) Shs 8,000,000.
 - (b) Shs 7,000,000.
 - (c) Shs 6,500,000.
 - (d) Shs 7,500,000.

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- (xi) A farmer is to lease a field for six years at an annual rent of Shs 5,000,000, the rentals being paid at the beginning of each year. What is the present value of the lease at 7%?
- (a) Shs 25,500,000.
 (b) Shs 19,000,000.
 (c) Shs 20,000,000.
 (d) Shs 23,830,000.
- (xii) A shirt which was priced Shs 45,000 last year is now Shs 55,000. What is the percentage increase in price to two decimal places.
- (a) 22.22%
 (b) 18.18%
 (c) 22.00%
 (d) 122.22
- (xiii) If Shs 12,000,000 is invested at 8% per annum with interest compounded quarterly, the amount to which the principal will have grown by the end of year three is approximately:-
- (a) Shs 15,117,000
 (b) Shs 14,880,000
 (c) Shs 15,219,000
 (d) Shs 15,880,000
- (xiv) Which of the following is **not** a reason for an idle time variance?
- (a) Wage rate increase.
 (b) Machine breakdown.
 (c) Non-availability of material.
 (d) Illness or injury to a worker.

Data for questions (xv) to (xviii)

In the year 2000 Kanataki Ltd. expects to operate at 75% capacity. The proposed budget for 100% capacity is as follows:

	Shs m /=	Shs m /=
Sales 2,000,000 units @ Shs 500	-	1000
Direct materials	250	
Direct wages	150	
Production overheads : Fixed	100	
Valuable	<u>50</u>	
Gross profit		<u>550</u>
Other costs : Fixed	150	450
Varying with sales	50	<u>200</u>
Net profit		<u><u>250</u></u>

- (xv) The breakeven point of Kanatani Ltd. for the year 2000 in sales revenue is:
- (a) Shs 500m/=
 - (b) Shs 625m/=
 - (c) Shs 750m/=
 - (d) Shs 250m/=
- (xvi) At the break even point the sales units of Kanatani Ltd. must be:
- (a) 1,850,000 units
 - (b) 2,000,000 units
 - (c) 1,500,000 units
 - (d) 1,250,000 units
- (xvii) If the selling price is reduced to Shs 450/= per unit, sales demand is expected to rise to 90% of the firm's output capacity. What would be the profit on the expected sales volume?
- (a) Shs 125m/=
 - (b) Shs 360m/=
 - (c) Shs 110m/=
 - (d) Shs 500m/=
- (xviii) for sales to reach 100% of the company's output capacity, the selling price must be reduced by 15% below budget and a advertising campaign costing Shs 20m/= would be needed. If the company decided to take this option its breakeven point in sales revenue would be:-
- (a) Shs 770m/=
 - (b) Shs 830m/=
 - (c) Shs 540m/=
 - (d) Shs 820m/=
- (xix) An investment project has a net present value of Shs 20m/=. The interest rate is 12% and the expected NPV of Shs 10m/= if the interest rate is 18%. What is the best estimate of the internal rate of return of this investment?
- (a) 16.5%
 - (b) 16.0%
 - (c) 15.5%
 - (d) 15%
- (xx) A component has a safety stock of 500, a reorder quantity of 3000 and a rate of demand which varies between 200 and 700 per week. The average stock is approximately:-
- (a) 3500
 - (b) 2500
 - (c) 2000
 - (d) 2300

SECTION A:

Question 1:

- i) **Which of the following best describes Prime Cost?**
- a) Materials Cost.
 - b) Materials Cost + Overhead expenses.
 - c) Materials Cost + Labour Costs + Direct Expenses.
 - d) Direct Materials Cost + Direct Labour Costs + Direct Expenses.
- ii) **Which of the following best explains value added?**
- a) Sales-Cost of bought-in materials and services.
 - b) Sales-Services.
 - c) Services-Sales.
 - d) None of these.
- iii) **Under the Standard Costing method:**
- a) all issues are at a standard price.
 - b) all issues are at a predetermined price.
 - c) all issues are at actual price.
 - d) all issues are at a future price.
- iv) **The method of sharing out overheads incurred amongst units produced is called:**
- a) Activity Based Costing.
 - b) Marginal Costing.
 - c) Absorption Costing.
 - d) Zero Base Budgeting.
- v) **Which of the following is an absorption rate?**
- a) Budgeted activity level divided by estimated overheads.
 - b) Estimated overheads divided by budgeted activity level.
 - c) Actual overheads divided by cost per unit.
 - d) Budgeted activity level divided by actual output.

- vi) **The LIFO method of pricing is where:**
- a) Materials received first are issued first.
 - b) Issues are priced in the reverse order of purchase.
 - c) Materials are issued at the average cost of materials in store.
 - d) The materials are issued at an inflated price.
- vii) **A System where separate ledger accounts are kept for both Cost Accounting and Financial Accounting is called:**
- a) Integrated System.
 - b) Management Information System.
 - c) Interlocking System.
 - d) Accounting Information System.
- viii) **Cost plus pricing is where:**
- a) A desired profit is added to selling price.
 - b) A desired profit is added to prime cost.
 - c) A desired profit margin is added to total costs.
 - d) Cost is added to price.
- ix) **The following are found on the debit side of a contract account except:**
- a) Materials on site.
 - b) Materials issued.
 - c) Labour.
 - d) Cost of contract b/f.
- x) **The costs incurred upto the point of separation are called:**
- a) Opportunity Costs.
 - b) Abnormal Costs.
 - c) Controllable Costs.
 - d) Common Costs.

Information for questions (xi) – (xiii)

Bakwano Industries, among other products, manufactures soap. The following information relates to a type of material required in the manufacture of soap.

Annual demand	2,400 units
Unit price	Shs,2,400
Ordering cost per order	Shs.4,000
Storage Cost	2% per annum
Interest rate	10% per annum

xi) Calculate the carrying cost:

- a) Shs. 4.80
- b) Shs. 14.40
- c) Shs. 480
- d) Shs. 288

xii) Calculate the economic order quantity (EOQ)

- a) 258.2 units
- b) 632 units
- c) 200 units
- d) 400 units

xiii) Calculate the number of orders per annum:

- a) 12 orders
- b) 10 orders
- c) 6 orders
- d) 4 orders

xiv) The standard material required to manufacture one unit of product X is 10kg and the standard price per kg of material is Shs.2,500. The cost account records, however, reveal that 11,500kg of materials costing Shs.276,000 were used for manufacturing 1,000 units of the product. Calculate the material usage variance.

- a) Shs. 400,000 Favourable
- b) Shs. 3,750,000 Adverse
- c) Shs. 3,750,000 Favourable
- d) Shs. 4,750,000 Adverse

- xv) **The following are features of a spreadsheet except:**
- a) You can insert a column or row at desired spot.
 - b) You can control the headings and date the way you want.
 - c) You are able to save the spreadsheet on your diskette.
 - d) It is not possible to automate a sequence of commands.
- xvi) **Costs which are not affected by the level of activity are called:**
- a) Product Costs.
 - b) Period Costs.
 - c) Differential Costs.
 - d) Opportunity Costs.
- xvii) **Given that the P/V Ratio of a Manufacturing Company is 24%, fixed expenses are Ushs.120,000 and sales are Ushs.1,000,000. Calculate the Break Even Point:**
- a) Shs. 400,000
 - b) Shs. 900,000
 - c) Shs. 500,000
 - d) Shs. 1,000,000
- xviii) **Which one of the following is a drawback of the Payback Period?**
- a) The number of years required to recover the initial investment of the asset is determined.
 - b) The method gives good results in industries where the risk of obsolescence is high.
 - c) It ignores the profit earned after the recovery period is over.
 - d) It is easy to calculate.
- xix) **Which one of the following statements is false?**
- a) A Fixed budget is useful when the actual level of activity corresponds to the budgeted level of activity.
 - b) Estimate the sales given in the sales budget is a mere guess.
 - c) Limiting factor is a major constraint on all the operational activities of the organisation.
 - d) A master budget is the summary incorporating its components' functional budgets.

- xx) Under this method, the costs of service departments are directly apportioned to the production departments without taking into consideration any service from one service department to another.
- a) Step distribution method.
 - b) Repeated distribution method.
 - c) Simultaneous equation method.
 - d) Direct redistribution method.

SECTION B:

Question 2:

- a) Distinguish between Conversion Cost and Development Cost. (4 Marks)
- b) Distinguish between Management Accounting and Financial Accounting. (4 Marks)
- c) The following data have been extracted from the books of Sunshine Industries Ltd. for the year 1999.

	Ushs.million
Finished Goods on 1/1/1999	50,000
Raw Materials on 1/1/1999	10,000
Work in Progress on 1/1/1999	14,000
Direct Labour	160,000
Purchase of Raw Materials	98,000
Indirect Labour	40,000
Heat, Light and Power	20,000
Factory Insurance	5,000
Repairs to Plant	3,000
Factory Supplies	5,000
Depreciation – Factory Building	6,000
Depreciation – Plant	10,000

Other information made available is:

Factory cost of good produced in 1999	280,000
Raw Material consumed in 1999	95,000
Cost of goods sold in 1999	160,000

No office and administration expenses were incurred during the year:

SECTION A

Question 1

- (i) Margin of safety is:
- (a) The point where sales revenue is equal to total cost.
 - (b) Selling price per unit minus variable costs per unit.
 - (c) The difference between budgeted sales revenue and breakeven sales volume.
 - (d) Fixed costs plus profit target.
- (ii) Which of the following is a semi-variable cost?
- (a) Maintenance cost.
 - (b) Factory rental.
 - (c) Raw materials cost.
 - (d) Direct labour cost.
- (iii) In process costing normal loss is treated in all the three of the following except one. Which one?
- (a) Normal loss is avoidable.
 - (b) Normal loss is expressed as percentage of input.
 - (c) Normal loss is unavoidable.
 - (d) The cost of normal loss is borne by the good output.
- (iv) Economic Order Quantity is:
- (a) Average stock of materials held in store.
 - (b) The quantity of stock order which minimises both the stock ordering costs and stock holding costs.
 - (c) The quantity of stock held by the firm throughout the year.
 - (d) Just in time quantity of stock delivered to the manufacturer.
- (v) Specific order costing does not include one of the following:
- (a) Job costing.
 - (b) Process costing.
 - (c) Contract costing.
 - (d) Batch costing.
- (vi) Under marginal costing principles, stock is valued based on:
- (a) Variable production costs.
 - (b) Variable and fixed production costs.
 - (c) Contribution made.
 - (d) Period costs.
- (vii) The appropriate absorption base in a capital intensive production environment would be one of the following:
- (a) Labour hours.
 - (b) Units produced.
 - (c) Percentage of prime cost.
 - (d) Machine hours.

Turn Over

Information for questions (viii) – (x)

The three main measures of labour efficiency are:

- (a) Production volume (activity) ratio.
- (b) Efficiency (productivity) ratio.
- (c) Capacity ratio

In relation to the above measures, Namirembe Cycle Ltd. which manually assembles wheel chairs for the disabled recorded the following data for the month of September 1999:

Standard time allowed per unit	30 minutes
Actual production	1500 units
Actual hours	300
Budget hours	250

- (viii) Calculate the production volume ratio?
 - (a) 180%
 - (b) 250%
 - (c) 300%
 - (d) 120%

- (ix) Calculate the efficiency (productivity) ratio.
 - (a) 250%
 - (b) 300%
 - (c) 120%
 - (d) 180%

- (x) Calculate the capacity ratio.
 - (a) 300%
 - (b) 120%
 - (c) 180%
 - (d) 250%

- (xi) Which of the following statements is not true in relation to IAS 2?
Inventories are assets:
 - (a) Held for sale in the ordinary course of business.
 - (b) Which should not be measured at the cover of cost and net realisable value.
 - (c) In the process of production of such sale.
 - (d) In the form of materials or supplies to be consumed in the production process or in the rendering of services.

- (xii) The problem of over or under absorption in full absorption costing is due to:
 - (a) Mathematical miscalculations by Management Accountants.
 - (b) Poor recording of actual figures by Management Accountants.
 - (c) Laziness by management in controlling costs.
 - (d) The use of pre-determined absorption rates from the budget in absorbing overheads in units produced.

- (xiii) The standard direct materials cost of a product is Shs 500. During the month of October, 8000 units of the product were made and the actual direct materials cost was Shs 5,000,000. Calculate the direct material total cost variance for the period.
- (a) 1,000,000 A
 - (b) 1,000,000 F
 - (c) 4,000,000 A
 - (d) 5,000,000 F
- (xiv) The setting and use of standards in an organisation is based on all the three of the following except one. Which one is it?
- (a) Performance evaluation.
 - (b) Investment appraisal.
 - (c) Continuous improvement
 - (d) Keeping standards meaningful and relevant.
- (xv) Which of the following factors is relevant to decision making?
- (a) Accounting depreciation.
 - (b) Future prime costs.
 - (c) Common costs.
 - (d) Sunk costs.
- (xvi) A payback period in investment appraisal is:
- (a) A time expressed in years which it takes the cash inflows from a capital investment project to equal the cash outflows.
 - (b) A period of time when the profits made from a capital investment project is equal to the investment made in the project.
 - (c) The ratio of the profits from a project as a percentage of capital cost.
 - (d) The discount rate which gives a net present value of zero.
- (xvii) Which of the following is a cost unit in a professional service such as that of accountants?
- (a) Contract.
 - (b) Ream of papers used.
 - (c) Chargeable hour.
 - (d) Room occupied.
- (xviii) The value of a benefit sacrificed in favour of an alternative course of action is known as:
- (a) A controllable cost
 - (b) A marginal cost.
 - (c) An activity based cost.
 - (d) An opportunity cost.

- (xix) The following entries will be found on the credit side of the process account except:
- (a) Abnormal loss
 - (b) Abnormal gain
 - (c) Normal loss
 - (d) Output
- (xx) A byproduct is:
- (a) Two or more products separated in the course of processing.
 - (b) Output of some value produced incidentally in manufacturing something else.
 - (c) Waste material / effluent from a production process.
 - (d) A product that will be sold to recover the costs of production.

SECTION : B

Question 2

The basis of a spreadsheet package is an electronic worksheet whereby data can be stored and manipulated at will.

Required:

Explain giving examples of how a spreadsheet package can be used in an organisation to aid decision making. (20 marks)

Question 3

- (a) Identify and explain the behavioural aspects of budgeting in an organisation. (10 marks)
 - (b) Describe the problems associated with implementing budgetary control in an organisation. (10 marks)
- [Total 20 marks]**

SECTION C

Question 4

Royal Form Ltd. manufactures and sells mattresses. The selling price is U Shs 120,000/=. Each mattress has the following unit cost:

	U Shs
Direct material	20,000
Direct labour	10,000
Variable production overhead	20,000
Fixed production overhead	<u>30,000</u>
	<u>80,000</u>

Administration costs are incurred at the rate of U Shs. 2,000,000 per annum.
The company achieved the following production and sales of blankets:

SECTION A

Question 1

- (i) Goods purchased for incorporation into products for sale are known as:
 - (a) Work in progress.
 - (b) Packages.
 - (c) Components.
 - (d) Finished goods.

- (ii) Fixed costs are ignored in making short-term management decisions because they are:
 - (a) Related to activity levels in the short run.
 - (b) Unrelated to activity levels in the short run.
 - (c) Related to activity levels in the long run.
 - (d) Unrelated to activity levels in the long run.

- (iii) Expenditure which can be economically identified with a specific saleable unit is called:
 - (a) An overhead.
 - (b) Prime cost.
 - (c) Fixed cost.
 - (d) Variable cost.

- (iv) Which of the following is false?
 - (a) Managers must be responsible for producing their own functional budgets.
 - (b) A fixed budget system compares actual results with the original budgets.
 - (c) The preparation of a budget is undertaken by an executive director.
 - (d) Functional budgets are combined to form a master budget.

- (v) The difference between a planned or budgeted cost and the actual cost incurred is known as:
 - (a) A standard cost.
 - (b) A budget.
 - (c) Marginal cost.
 - (d) Variance.

- (vi) Information produced by Management Accountants is used by Company Management for all the following except:
 - (a) Recruitment and selection of new employees.
 - (b) Performance appraisal of the current employees.
 - (c) Pricing company products.
 - (d) Cost control.

- (vii) A cost centre may take any of the following forms except:
- (a) A department.
 - (b) An area.
 - (c) A machine.
 - (d) An output.
- (viii) In breakeven charts, the angle of incidence is formed between:
- (a) The total cost line and the fixed cost line.
 - (b) The total cost line and the sales line.
 - (c) The sales line and fixed cost line.
 - (d) None of the above.
- (ix) A costing technique involving the sharing of production overheads to cost centres is known as:
- (a) Apportionment.
 - (b) Absorption.
 - (c) Contribution.
 - (d) Diversification.
- (x) The consistent parts of cost according to the factors upon which expenditure is incurred are known as:
- (a) Product cost.
 - (b) Element of cost.
 - (c) Process cost.
 - (d) Prime cost.
- (xi) Which of the following is a journal entry for cost of sales in cost ledger accounting?
- (a) Dr. Cost of Sales A/C and Cr. Sales A/C.
 - (b) Dr. Sales A/C and Cr. Cost of Sales A/C.
 - (c) Dr. Sales A/C. and Cr. Profit & Loss A/C.
 - (d) Dr. Profit & Loss A/C and Cr. Sales A/C.
- (xii) Which of the following investment appraisal techniques gives an absolute financial result?
- (a) Accounting Rate of Return (ARR).
 - (b) Internal Rate of Return (IRR).
 - (c) Pay Back.
 - (d) Net Present Value (NPV).
- (xiii) What basis could you recommend for apportioning rent for a supermarket?
- (a) Ground rent.
 - (b) Floor area.
 - (c) Electricity light points.
 - (d) Book value of building.

- (xiv) The following methods are used to segregate semi variable into fixed and variable overhead costs except:
- (a) Decimal method.
 - (b) Methods of average.
 - (c) High-low method.
 - (d) Least squares method.

Use the following information to answer questions (xv) to (xvii).

The Profit Volume (P/V) ratio of Lugoba Traders Ltd dealing in precision instruments is 50%, the margin of safety is 40%, and the sales volume is Shs 50 million.

- (xv) Calculate the margin of safety in shillings
- (a) Shs 10,000,000.
 - (b) Shs 15,000,000.
 - (c) Shs 30,000,000.
 - (d) Shs 20,000,000.
- (xvi) Calculate the sales at B.E.P.
- (a) Shs 30,000,000.
 - (b) Shs 20,000,000.
 - (c) Shs 40,000,000.
 - (d) Shs 10,000,000.
- (xvii) Calculate the contribution.
- (a) Shs 30,000,000.
 - (b) Shs 15,000,000.
 - (c) Shs 10,000,000.
 - (d) Shs 20,000,000.
- (xviii) Which of the following is NOT a technique for stock control?
- (a) Just in Time (JIT).
 - (b) Standard costing.
 - (c) Economic Order Quantity (EOQ).
 - (d) Materials Requirements Planning (MRP).
- (xix) Management Accountants are concerned about value for money (VFM) in their operations. Which of the following is NOT their concern?
- (a) To ensure that output is produced within budgeted cost.
 - (b) To ensure that good quality inputs are used to produce quality output.
 - (c) To ensure that the customer pays for the goods on time.
 - (d) To ensure that the customer's order is delivered on time to the satisfaction of the customer.

- (xx) The ratio of output to input is a measure of:
- (a) Economy.
 - (b) Effectiveness.
 - (c) Productivity.
 - (d) Cost reduction.

SECTION B

Question 2

- (a) Identity three ways of classifying the wages of an employee giving the purpose of each classification. (6 marks)
- (b) ***The following information relates to the wages paid to workers for a four week period in a factory weaving department where two products, blankets and bed sheets are manufactured.***

All workers are paid at hourly rates. Basic rates (gross) are Shs 800 per hour for direct workers and Shs 600 per hour for indirect workers for a 40 hour week.

The department employs 24 direct workers and 9 indirect workers. Overtime is regularly worked to meet general production requirements, and is paid at a premium of 25% over basic rate for all workers. Overtime hours in the four week period were 256 and 84 for direct and indirect workers respectively.

Production of the two products during the four week period was:

Blankets – 9,640 units in 1,620 hours of direct workers' time.

Bed sheets – 22,800 units in 2,270 hours of direct workers' time.

The balance of the direct workers' time in the period was non productive time.

The net wages paid (i.e. net of employee deductions) in the period were:

Direct workers	Shs 2,509,000.
Indirect workers	Shs 715,000.

The factory uses a batch costing system, based on actual costs which is integrated with the financial accounts.

Required:

- (i) Calculate the gross wages, for the four week period in the weaving department for both direct and indirect workers. (6 marks)
- (ii) Prepare the weaving department's Wages Control Account for the period showing detailed workings to justify the calculation of both direct and indirect wages. (8 marks)

(Total 20 marks)

Question 1

- (i) Which of the following concepts best demonstrates that all things constant, it is better to have money now rather than later?
- (a) Future value of money.
 - (b) Time value of money.
 - (c) Present value of money.
 - (d) Real value of money.
- (ii) Which of the following is an example of a curvilinear cost?
- (a) A piece of work scheme for individual workers with differential rates.
 - (b) A variable cost of materials.
 - (c) Expenditure on advertising and research and development.
 - (d) Cost of rent of an office building.
- (iii) Which of the following is **not** true about the split-off point in the processing of joint products?
- (a) Various products become identifiable.
 - (b) Subsequent to the split-off point any costs incurred can be identified.
 - (c) Up to the split-off point all costs are joint costs.
 - (d) Subsequent costs after split-off pose costing problems.
- (iv) When absorbed overheads are greater than actual overheads, there is:
- (a) under absorption.
 - (b) over absorption.
 - (c) over apportionment.
 - (d) under apportionment.
- (v) The inventory system that updates stocks after every stock movement to calculate the balance on hand is referred to as:
- (a) The BIN Card system.
 - (b) Continuous stock taking system.
 - (c) Perpetual Inventory system.
 - (d) Weighted average system.
- (vi) If an expense can be linked with a specific cost unit, then it is treated as:
- (a) fixed.
 - (b) direct.
 - (c) indirect.
 - (d) variable.

Use the following data to answer questions (vii) to (ix):

Dotha Company Ltd has the following data in relation to one of its projects. The initial cash outlay is shs 1,000,000, the expected life of this project is 3 years and the opportunity cost of capital is 10%.

Year	Cash in flows Shs	Annual profits Shs	Present Value Factor	Annuity Factor
1	500,000	90,000	0.9091	0.9091
2	300,000	80,000	0.8264	1.7355
3	400,000	100,000	0.7513	2.4868

- (vii) Determine the Net Present Value.
- (a) Shs 1,002,990
 - (b) Shs 2,990
 - (c) Shs 2,002,990
 - (d) Shs 200,000
- (viii) Compute the Pay back period.
- (a) 2.5 years.
 - (b) 3.0 years.
 - (c) 2.0 years.
 - (d) 2.6 years.
- (ix) Calculate the Accounting Rate of Return.
- (a) 27%.
 - (b) 54%.
 - (c) 18%.
 - (d) 10%.
- (x) Which costing system is suitable where a quantity of identical items is manufactured?
- (a) Job costing.
 - (b) Process costing.
 - (c) Batch costing.
 - (d) Standard costing.
- (xi) The type of budget designed to remain unchanged irrespective of the volume of output or turnover attained is referred to as:
- (a) flexible budget.
 - (b) target budget.
 - (c) fixed budget.
 - (d) master budget.

- (xii) A labour incentive scheme that assumes a progressive rate for various production levels is referred to as:
- (a) premium bonus system.
 - (b) straight piecework.
 - (c) individual incentive scheme.
 - (d) differential piecework.
- (xiii) Which of the following costing techniques is job costing built on?
- (a) Standard.
 - (b) Marginal.
 - (c) Absorption.
 - (d) Contract.
- (xiv) Which cost accounting system does not distinguish between cost accounts and financial accounts?
- (a) Interlocking cost accounts.
 - (b) Cost ledger control accounts.
 - (c) Finished ledger control accounts.
 - (d) Integrated cost accounts.
- (xv) When preparing a production budget, the quantity to be produced equals:
- (a) sales quantity + opening stock + closing stock.
 - (b) sales quantity - opening stock + closing stock.
 - (c) sales quantity - opening stock - closing stock.
 - (d) sales quantity + opening stock - closing stock.
- (xvi) What are prime costs?
- (a) All costs incurred in manufacturing a product.
 - (b) The total of direct costs.
 - (c) The material costs of a product.
 - (d) The cost of operating a department.
- (xvii) The accounting entries for the return of unused direct materials to stores from production in an integrated cost system would be:
- (a) Dr Work in progress account Cr Stores control account
 - (b) Dr Stores control account Cr Work in progress account
 - (c) Dr Production overhead account Cr Stores control account
 - (d) Dr Stores control account Cr Finished goods account

(xviii) A cost center may take any of the following forms except:

- (a) an output.
- (b) a department.
- (c) a machine.
- (d) an area.

(xix) What term is used to describe indirect costs?

- (a) Overheads.
- (b) Prime costs.
- (c) Absorption.
- (d) Factory costs.

(xx) Which of the following is not a responsibility of a cost accountant?

- (a) Cost control.
- (b) Price determination.
- (c) Inventory control.
- (d) Receiving sales revenue.

SECTION B

Question 2

- (a) Describe the concept of opportunity cost. **(3 marks)**
 - (b) What are the purposes for which cost information is required? **(3 marks)**
 - (c) State circumstances under which process costing system is appropriate. **(1 mark)**
 - (d) Distinguish between the accountant's and the economist's model of cost-volume-profit analysis. **(3 marks)**
 - (e) Explain the different purposes of budgeting. **(6 marks)**
 - (f) Describe the accounting treatment of by-products. **(4 marks)**
- (Total 20 marks)**

SECTION A

Question 1

- (i) Which of the following is a suitable basis of apportioning office rent and rates?
- (a) Floor area.
 - (b) Value of office equipment.
 - (c) Number of employees.
 - (d) Office insurance.
- (ii) The following are qualitative factors that influence the make or buy decisions **EXCEPT**:
- (a) quality of goods supplied by the supplier.
 - (b) uninterrupted supply by supplier.
 - (c) adverse effect on labour relations.
 - (d) size of goods supplied by the supplier.
- (iii) The level of planning for which line managers are generally responsible is:
- (a) strategic.
 - (b) tactical.
 - (c) operational.
 - (d) managerial.
- (iv) Over-absorbed overheads under absorption costing are:
- (a) absorbed overheads in excess of actual overheads.
 - (b) absorbed overheads in excess of budgeted overheads.
 - (c) actual overheads in excess of absorbed overheads.
 - (d) actual overheads in excess of budgeted overheads.
- (v) The following are the causes of labour efficiency variance **EXCEPT**:
- (a) emergency purchases.
 - (b) ineffective supervision.
 - (c) poor quality materials.
 - (d) poor working conditions.
- (vi) Which of the following does **NOT** affect the level of working capital?
- (a) Level of inventory.
 - (b) Debtors' collection period.
 - (c) Amortisation of leasehold.
 - (d) Outstanding electricity bills.

- (vii) A product that emerges incidentally under the production process is referred to as:
- (a) joint product.
 - (b) by-product.
 - (c) finished product.
 - (d) emergent product.
- (viii) The actual market price of convertible stock will depend on the following **EXCEPT** the:
- (a) price of straight preference shares.
 - (b) length of time before conversion takes place.
 - (c) market's expectation.
 - (d) current conversion value.

Use the following information to answer questions (ix) – (x):

Big Ways Ltd produces a product which has a constant monthly demand of 5,000 units. Ordering cost is Shs 10,000 per order and holding cost is Shs 5,000.

- (ix) Calculate, in units, the economic order quantity (EOQ).
- (a) 400.
 - (b) 657.3.
 - (c) 866.4.
 - (d) 598.5.
- (x) Calculate the number of orders per year.
- (a) 366.2
 - (b) 400.1
 - (c) 164.3
 - (d) 185.4.
- (xi) Which of the following is **NOT** a reason for stock market listing?
- (a) Access to a wider pool of finance.
 - (b) Transfer of capital to other uses.
 - (c) Enhancement of the company's image.
 - (d) Accounting for stocks in the capital market.
- (xii) A flexible budget is a:
- (a) budget which shows variable production costs only.
 - (b) monthly budget which is changed to reflect the number of days in a month.
 - (c) budget updated halfway into the year to include actual results for the first half of the year.
 - (d) budget that shows abnormal gains.

- (xiii) Which of the following refers to cost drivers?
- (a) Factors that cause costs to increase.
 - (b) Costs that vary with production volume.
 - (c) Transaction based cost drivers.
 - (d) Absorption-based costs.
- (xiv) Which of the following should be treated as indirect labour in analyzing a company's cost structure?
- (a) Assembly workers in an assembling plant.
 - (b) Porters on a building project.
 - (c) Drivers in a transport company.
 - (d) Drivers in a Mobile Telephone Network company.
- (xv) The following refers to cost of capital **EXCEPT** the:
- (a) cost of funds raised and used by a firm.
 - (b) minimum return that a firm should make from its own investment.
 - (c) return that investors expect from an investment.
 - (d) cash flows expected from an investment.
- (xvi) Which of the following is an advantage of the Just-in-time (JIT), production system?
- (a) Reduction in inventory holding costs.
 - (b) Improved manufacturing lead time.
 - (c) Reduced labour productivity.
 - (d) Increased pilferage of inventories.
- (xvii) Which of the following refers to dividend cover?
- (a) The percentage of post tax earnings that are distributable as dividends.
 - (b) Number of times the actual dividend could be paid out of the current profits.
 - (c) The market's appraisal of the firm's dividend future prospects.
 - (d) The rate of growth in dividends.
- (xviii) Which of the following is **NOT** true about a rights issue of shares by a listed company?
- (a) The rights issue price can be at a discount to the market price.
 - (b) Relative rights are unaffected if shareholders exercise their rights.
 - (c) Rights issues do not require a prospectus.
 - (d) If shareholders do not take up the rights, the rights lapse.

- (xix) Which of the following is **NOT** true after a stock split?
- (a) The market price per share is reduced.
 - (b) The number of outstanding shares is increased.
 - (c) Retained earnings are changed.
 - (d) Proportional ownership remains unchanged.
- (xx) Micro Ltd has in issue 9% debentures of Shs 100 each redeemable in exactly 10 years' time at a premium of 5%. The current required return on debentures of this type is 11%. What is the current price of the debenture?
- (a) Shs 180.
 - (b) Shs 270.
 - (c) Shs 90.
 - (d) Shs 190.

SECTION A

Question 1

- (i) An inventory control system that updates inventory after every inventory movement to calculate the balance on hand is referred to as:
 - (a) the bin card system.
 - (b) continuous inventory counting system.
 - (c) perpetual inventory system.
 - (d) weighted average system.

- (ii) The type of budget designed to remain unchanged irrespective of the volume of output or turnover attained is referred to as:
 - (a) flexible budget.
 - (b) target budget.
 - (c) fixed budget.
 - (d) master budget.

- (iii) When preparing a production budget, the quantity to be produced equals:
 - (a) sales quantity + opening stock + closing stock.
 - (b) sales quantity - opening stock + closing stock.
 - (c) sales quantity - opening stock - closing stock.
 - (d) sales quantity + opening stock - closing stock.

- (iv) A labour incentive scheme that assumes a progressive rate for various production levels is referred to as:
 - (a) premium bonus system.
 - (b) straight piecework.
 - (c) individual incentive scheme.
 - (d) differential piecework.

- (v) When absorbed overheads are less than actual overheads, there is an:
 - (a) under absorption.
 - (b) over absorption.
 - (c) over apportionment.
 - (d) under apportionment.

- (vi) The accounting entries for the issue of direct materials for use in production in an integrated cost system would be to debit:
 - (a) work in progress account and credit stores control account.
 - (b) stores control account and credit work in progress account.
 - (c) production overhead account and credit stores control account.
 - (d) stores control account and credit finished goods account.

- (vii) An ideal standard can best be described as that which:
- (a) can be attained based on the current conditions.
 - (b) can be attained under perfect operating conditions.
 - (c) remains unchanged over the years.
 - (d) can be attained if production is carried out efficiently.
- (viii) The budgeting system in which every item of expenditure has to be justified before inclusion in an organisation's budget is budgeting.
- (a) incremental
 - (b) zero-based
 - (c) activity-based
 - (d) continuous
- (ix) Which of the following statements describes a scrip dividend?
- (a) A dividend paid at a fixed percentage rate on the market value of the shares on the date that the dividend is declared.
 - (b) A dividend payment that takes the form of new shares instead of cash.
 - (c) An issue of new shares to existing shareholders at less than the nominal value of the shares.
 - (d) An issue of new shares to existing shareholders by converting equity reserves into issued share capital.
- (x) Which of the following statements about convertible securities is **FALSE**?
- (a) They must be converted into shares before the redemption date.
 - (b) The price at which they are convertible into shares is predetermined.
 - (c) Issue costs are lower than equity.
 - (d) They are fixed return securities.
- (xi) Which of the following refers to the time taken for the cash inflows from a capital investment project to equal the cash outflows?
- (a) Present value period.
 - (b) Payback period.
 - (c) Time value of money.
 - (d) Capital investment period.

- (xii) Which of the following is **NOT** a cash flow timing convention used in discounted cash flows?
- (a) A cash outlay to be incurred at the beginning of an investment project occurs in year zero.
 - (b) A cash outlay, savings or inflows which occur during the course of a time period is assumed to occur all at once at the end of the time period.
 - (c) All cash outlays and receipts are uniformly distributed throughout the investment period.
 - (d) A cash outlay or receipt that occurs at the beginning of a time period is taken to occur at the end of the previous year.
- (xiii) Which of the following does **NOT** affect the market value of a company's shares?
- (a) The rate of growth of dividends.
 - (b) The rate of return which shareholders require.
 - (c) The amount in dividends that a company pays.
 - (d) The retention policy.
- (xiv) Which of the following is **NOT** a benefit of the just-in-time (JIT) manufacturing method?
- (a) Reduced manufacturing lead time.
 - (b) Reduced labour productivity.
 - (c) Reduction in inventory holding costs.
 - (d) Reduction in the number of accounting transactions.
- (xv) The following are reasons for having a lengthy cash float **EXCEPT**:
- (a) delays in cash remittances.
 - (b) delays in banking the cash payments received.
 - (c) time required by banks to clear cheques.
 - (d) delays in withdrawing cash from the bank.
- (xvi) Which of the following is the most likely symptom of overtrading?
- (a) Rapid increase in sales.
 - (b) Increase in the level of the current ratio.
 - (c) Rapid increase in profits.
 - (d) Static levels of inventory turnover.

- (xvii) Which of the following costs is **NOT** associated with the issue of shares?
- (a) Underwriting costs.
 - (b) Stock exchange listing fees.
 - (c) Advertising in national newspapers.
 - (d) Directors' remuneration.
- (xviii) Which of the following is **NOT** true about split-off point in joint products processing?
- (a) Up to the split-off point all costs are joint costs.
 - (b) Subsequent costs after split-off pose costing problems.
 - (c) Subsequent to the split-off point any costs incurred can be identified.
 - (d) Various products become identifiable.
- (xix) Which of the following is **NOT** true about activity-based costing (ABC)?
- (a) Uses several cost drivers to trace overheads to activities.
 - (b) Assumes that activities are responsible for the incurrence of costs.
 - (c) Involves first tracing cost to activities and later to products.
 - (d) Uses only labour hours and machine hours to trace overheads to products.
- (xx) A cost centre may take any of the following forms **EXCEPT**:
- (a) a department.
 - (b) a machine.
 - (c) an area.
 - (d) an output.

SECTION A

Question 1

- (i) Which of the following sources of finance is **NOT** commonly offered by commercial banks?
- (a) Short-term loans.
 - (b) Overdraft facilities.
 - (c) Medium-term loans.
 - (d) Long-term loans.
- (ii) Which of the following is most likely to reduce the firm's working capital?
- (a) Lengthening the credit period given to debtors.
 - (b) Buying new machinery.
 - (c) Adopting the Just-in-time procurement model.
 - (d) Adopting the Miller-Orr model of cash management.
- (iii) The cost of scheduling production can be flexed under Activity Based Budgeting through the number of:
- (a) set-ups.
 - (b) direct labour hours.
 - (c) parts used in production.
 - (d) items produced.
- (iv) Which of the following factors might **NOT** influence the sales budget?
- (a) Anticipated advertising.
 - (b) Pricing policies and discounts offered.
 - (c) Economic environment.
 - (d) Production overheads.
- (v) Which of the following is a cause of a favourable labour efficiency variance?
- (a) Material of higher quality than standard.
 - (b) Unexpected slump in demand.
 - (c) Labour strikes.
 - (d) Poor machine maintenance.
- (vi) The overhead absorption rate can be described as a ratio of:
- (a) estimated overheads to actual activity level.
 - (b) estimated overheads to budgeted activity level.
 - (c) actual overhead to actual activity level.
 - (d) actual overhead to budgeted activity level.

- (vii) Which level of management is concerned with setting or changing the objectives of an organization?
- (a) Tactical.
 - (b) Strategic.
 - (c) Operational.
 - (d) Technical.
- (viii) Where two or more investment projects exist and only one project can be chosen, such projects are referred to as:
- (a) independent.
 - (b) mutually exclusive.
 - (c) multiple.
 - (d) conventional.
- (ix) Under process costing system, a loss inherent in every production process is referred to as:
- (a) Abnormal.
 - (b) Normal.
 - (c) Process.
 - (d) Actual.
- (x) Which of the following does **NOT** relate to the split-off point under process costing?
- (a) Joint products and by products may emerge.
 - (b) It is a point at which products that cannot be separately identified emerge.
 - (c) Products with significant sales values might emerge.
 - (d) Various products that emerge require different costing techniques.
- (xi) The difference between the operating point and the break-even point is referred to as:
- (a) Break even sales.
 - (b) Margin of safety.
 - (c) Buffer point.
 - (d) Contribution.
- (xii) According to the economist, the profit maximizing point is a point at which:
- (a) total cost equals to total revenue.
 - (b) marginal cost equals to marginal revenue.
 - (c) total profits equal to total revenue.
 - (d) total profits equal to total costs.

- (xiii) Which method of specific order costing would be most suitable for large and long lasting projects?
- (a) Job costing.
 - (b) Process costing.
 - (c) Contract costing.
 - (d) Absorption costing.
- (xiv) Which of the following sources of finance has characteristics of both debt and equity?
- (a) Ordinary share capital.
 - (b) Debenture capital.
 - (c) Share premium.
 - (d) Preference share capital.
- (xv) Which of the following factors may increase the cash flow of a business?
- (a) Inflation.
 - (b) Making losses.
 - (c) Growth in business.
 - (d) Postponing loan repayments.

Use the following information to answer questions (xvi) and (xvii):

Product Z has a standard direct material cost of 15 kg of material Y at shs 200 per kg. During the third quarter, 1,000 units of Z were manufactured, using 12,000 kg of material Y, which cost Shs 2,100,000.

- (xvi) Calculate the material price variance
- (a) 300,000 (F).
 - (b) 300,000 (A).
 - (c) 900,000 (F).
 - (d) 900,000 (A).
- (xvii) Calculate the material usage variance
- (a) 3,000 kg (A).
 - (b) 3,000 kg (F).
 - (c) 2,625 kg (A).
 - (d) 2,625 kg (F).

- (xviii) Which of the following is **NOT** a role of the Capital Markets Authority?
- (a) Mobilization of savings.
 - (b) Provision of alternative long-term finance.
 - (c) Allocation of capital.
 - (d) Regulating commercial banks.
- (xix) When absorbed overheads are less than actual overheads, there is an:
- (a) under absorption.
 - (b) over absorption.
 - (c) over apportionment.
 - (d) over apportionment.
- (xx) The actual market price of a convertible stock will depend on all the following **EXCEPT** the:
- (a) price of straight debt.
 - (b) current conversion value.
 - (c) length of time before conversion may take place.
 - (d) coupon rate of interest.

SECTION A

Question 1

- (i) Employee empowerment involves encouraging and authorizing workers to take initiatives to:
- (i) improve operations.
 - (ii) reduce costs.
 - (iii) improve customer service
- (a) (i) and (ii).
(b) (i) and (iii).
(c) (ii), and (iii).
(d) (i), (ii) and (iii).
- (ii) When absorbed overheads are greater than actual overheads, there is an:
- (a) under absorption.
 - (b) over absorption.
 - (c) over apportionment.
 - (d) under apportionment.
- (iii) The inventory control system that updates inventory values and quantities after every movement in inventory to calculate the balance on hand is referred to as:
- (a) the BIN card system.
 - (b) continuous inventory counting taking system.
 - (c) perpetual inventory system.
 - (d) weighted average system.
- (iv) The key to a just-in-time (JIT), production system is:
- (a) to provide products or services that do the best possible job of satisfying the customer.
 - (b) the constant effort to eliminate waste, reduce response time, simplify the design of both products and processes, and improve quality and customer service.
 - (c) the focus on the customer.
 - (d) the "pull" approach to controlling manufacturing.
- (v) If fixed costs per unit are Shs 10,000 when a firm produces 10,000 units of a product, what are the fixed costs per unit when 12,500 units are produced?
- (a) Shs 12,500.
 - (b) Shs 6,000.
 - (c) Shs 8,000.
 - (d) Shs 10,000

- (vi) Which of the following entities is **NOT** likely to use a job-costing system?
- (a) Custom-furniture manufacturers.
 - (b) Consultancy firms.
 - (c) Hospitals.
 - (d) Specific order contractors.
- (vii) A firm that uses labour hours to apply overheads to manufacturing may have increased amounts of under-applied overheads at the end of a period if:
- (a) suppliers of direct materials increase prices across-the-board.
 - (b) the firm terminates two production supervisors.
 - (c) employees are hit hard with a widespread outbreak of swine flu.
 - (d) direct labourers are granted a wage increase.
- (viii) Rex Co. Ltd had 4,000 units of work in process on 1 April 2008. During April, 11,000 units were completed and as of 30 April 5,000 units remained in production. How many units were started on during April?
- (a) 5,000.
 - (b) 10,000
 - (c) 11,000.
 - (d) 12,000
- (ix) When considering whether to investigate a variance, managers should consider the following **EXCEPT**:
- (a) size of the variance.
 - (b) pattern of recurrence.
 - (c) trends over time.
 - (d) nature, namely, whether favourable or unfavourable.
- (x) A cost centre may take any of the following forms **EXCEPT**:
- (a) an output.
 - (b) a department.
 - (c) a machine.
 - (d) an area.

- (xi) Which of the following statements concerning preferred stock is **NOT** correct?
- (a) Preferred stock has a par (or liquidating) value.
 - (b) Most preferred issues are cumulative, meaning that the cumulative total of all unpaid preferred dividends must be paid before dividends can be paid on the common stock.
 - (c) Unpaid preferred dividends are called warrants.
 - (d) Preferred stock is a hybrid—it is similar to bonds in some respects and to common stock in other ways.
- (xii) Business risk is defined as the:
- (a) equity risk that comes from the nature of a firm's operating activities.
 - (b) probability that a firm will file for bankruptcy.
 - (c) situation in which a firm causes its creditors to suffer a financial loss.
 - (d) probability that a firm's cost of equity capital will increase.
- (xiii) Which of the following statements best describe(s) the optimal capital structure?
- (i) Optimal capital structure is the mix of debt, equity, and preferred stock that maximizes the company's earnings per share (EPS).
 - (ii) Optimal capital structure is the mix of debt, equity, and preferred stock that maximizes the company's stock price.
 - (iii) Optimal capital structure is the mix of debt, equity, and preferred stock that minimizes the company's weighted average cost of capital (WACC).
- (a) (i).
 - (b) (ii).
 - (c) (iii).
 - (d) (ii) and (iii).
- (xiv) A decrease in a firm's willingness to pay dividends is likely to result from an increase in its:
- (a) earnings stability.
 - (b) access to capital markets.
 - (c) profitable investment opportunities.
 - (d) collection of accounts receivable.

- (xv) The "risk-free rate" includes the following components:
- (a) a "real" rate of return and an inflation component.
 - (b) a "real" rate of return and a component for interest rate risk.
 - (c) an inflation component and a component for interest rate risk.
 - (d) a nominal rate of return and a component of interest rate risk.
- (xvi) Which of the following sources of finance to companies is the most widely used in practice?
- (a) Rights issue.
 - (b) Bank borrowing.
 - (c) New share issues.
 - (d) Retained earnings.
- (xvii) Which of the following is **LEAST** likely to be reason for seeking stock market flotation?
- (a) Access to a wider pool of finance.
 - (b) Enhancement of the company's image.
 - (c) Improving the existing owner's control over the business.
 - (d) Transfer of capital to other uses.
- (xviii) For a certain project, the net present value at a discount rate of 15% is Shs 36,700 and at a rate of 18% the net present value is negative at (Shs 13,900). What is the internal rate of return of the project?
- (a) 16.5%
 - (b) 15.7%
 - (c) 16.6%
 - (d) 17.2%
- (xix) a decision to is **NOT** an investment decision.
- (a) take over of another company
 - (b) launch a new research project
 - (c) retain profits for reinvestment in the business
 - (d) carry out an advertising campaign
- (xx) If a system of activity-based budgeting (ABB) is in use, the cost of scheduling production can be flexed by the number of:
- (a) set-ups.
 - (b) direct labour hours.
 - (c) parts used in production.
 - (d) items produced.

SECTION A

Question 1

- (i) The variance that occurs when actual hours worked exceed standard hours allowed is:
- (a) favourable labour efficiency.
 - (b) favourable labour rate.
 - (c) adverse labour efficiency.
 - (d) adverse labour rate.
- (ii) The process of overhead cost apportionment is carried out so that:
- (a) costs may be controlled.
 - (b) cost units accumulate overheads as they pass through cost centres.
 - (c) whole items of cost can be charged to cost centres.
 - (d) common costs are shared among cost centres.
- (iii) Mimi Ltd produces product mums which has a maximum demand of 4,000 units. The product requires component x which is purchased at Shs 20,000. For every unit of the finished product one unit of the component is required. The ordering cost is Shs 120,000 per order and the holding cost is 10% per annum. What is the economic order quantity?
- (a) 2,400 units.
 - (b) 1,200 units.
 - (c) 4,800 units.
 - (d) 2,000 units.
- (iv) Which of the following statements is correct about idle time?
- (a) It cannot be controlled because it is due to external factors.
 - (b) It is always controllable because it is due to internal factors.
 - (c) Idle time is always due to inefficient production staff.
 - (d) Idle time is not always the fault of production staff.
- (v) Which of the following methods of inventory pricing best approximates specific identification of actual flow of costs and units in most manufacturing situations?
- (a) Average cost
 - (b) FIFO
 - (c) LIFO
 - (d) Base cost

- (vi) Which of the following is **NOT** an indirect cost?
- (a) Wages of a production department machine operator.
 - (b) Wages of a production department cleaner.
 - (c) Materials used for machine maintenance in a production department.
 - (d) Materials used to clean the production department.
- (vii) In process costing 'point of separation' is relevant to:
- (a) abnormal losses.
 - (b) joint products.
 - (c) by-products.
 - (d) abnormal gains.
- (viii) Which of the following is **NOT** part of working capital?
- (a) Accounts payable.
 - (b) Inventory.
 - (c) Computers.
 - (d) Accounts receivable.
- (ix) Which of the following is **FALSE** about activity-based costing?
- (a) Overheads are charged to products using predetermined overhead absorption rates.
 - (b) It involves identification of cost drivers.
 - (c) Costs that vary with production levels in the short term use volume related cost drivers.
 - (d) Support overheads are charged to production on the basis of usage of activity.
- (x) Which of the following actions should be taken by management when they anticipate a short term cash deficit in their organisation?
- (a) Issue of share capital.
 - (b) Shut down some production lines.
 - (c) Acquire long term loans.
 - (d) Arrange for an overdraft facility.
- (xi) Which of the following does not affect the recorded costs of closing inventory?
- (a) Abnormal wastage.
 - (b) Normal wastage.
 - (c) Seasonal wastage.
 - (d) Standard wastage.

- (xii) Within a relevant range, the amount of variable cost per unit:
- (a) differs at each production level.
 - (b) remains constant at each production level.
 - (c) increases as production increases.
 - (d) decreases as production increases.
- (xiii) In case of a limiting factor the decision maker should considerin order to maximize profit.
- (a) sales units
 - (b) contribution margin
 - (c) variable costs
 - (d) fixed costs
- (xiv) The technique of sharing out production overheads to cost centres is known as:
- (a) apportionment.
 - (b) absorption.
 - (c) contribution.
 - (d) allocation.
- (xv) The following are roles of the Uganda Securities Exchange **EXCEPT**:
- (a) providing market for shares.
 - (b) providing security to company assets.
 - (c) facilitating privatization of parastatals.
 - (d) helping people obtain stakes in privatized companies.
- (xvi) the payback period method of project appraisal is most widely used because of the following reasons **EXCEPT**:
- (a) it is used to rank projects where a firm faces liquidity constraints.
 - (b) it is appropriate where future cash flows are difficult to predict.
 - (c) it helps managers avoid risky investments.
 - (d) it leads to excessive investment in short term projects.
- (xvii) Which of the following sources of finance has characteristics of both debt and equity?
- (a) Ordinary share capital.
 - (b) Debenture capital.
 - (c) Share premium.
 - (d) Preference share capital.

- (xviii) The following are ways by which a firm can reduce its investment in debtors **EXCEPT**:
- (a) invoice discounting.
 - (b) advance against collection.
 - (c) negotiation of bills or cheques.
 - (d) use of documentary credits.
- (xix) If shs 18 million is invested now to earn 10% for three years and 8% thereafter, what would be the size of total investment at the end of 5 years?
- (a) Shs 23, 958,000
 - (b) Shs 20,995,200
 - (c) Shs 26, 447,905
 - (d) Shs 27,923,616
- (xx) Which of the following does **NOT** lengthen the operating cycle?
- (a) Long turnover periods for stocks.
 - (b) Lengthy debtors' days.
 - (c) Long creditors' period.
 - (d) Short creditors' period.

SECTION B

Question 2

Fast Track Services Ltd is involved in parcel delivery business and is evaluating a new venture in which it would use tricycles to offer courier services within a day.

To achieve this, the company has to purchase a building for Shs 2.5 million payable immediately. The building would require renovations of Shs 1.5 million to enable it become a control and distribution centre. These renovations would take a year and operations would not commence until the building was ready.

Immediately after completion of the building Fast Track Services Ltd would take delivery of 10 tricycles at Shs 400,000 each and engage riders.

Running costs are expected to be Shs 750,000 per annum and variable costs Shs 100 per parcel.

Fixed costs are expected to increase by 8% per year and variable costs by 5% per year. Shs 500,000 of working capital would need to be injected immediately before completion of the building.

SECTION A

Question 1

- (i) When considering qualitative factors to influence your make or buy decisions, which of the following is not taken into consideration?
- a) Quality of goods supplied.
 - b) Price of goods supplied.
 - c) Secrecy of know-how.
 - d) Labour relations.
- (ii) In drawing up a long term contract agreement, any changes in the contract price due to increases in the cost of raw materials and labour are provided for using:
- a) Cost plus clause.
 - b) Marginal costing clause.
 - c) Escalation clause.
 - d) Retentions clause.
- (iii) A document used to record direct material, direct wages and overheads in job costing is called:
- a) A proforma invoice.
 - b) A bin card.
 - c) Inventory ledger account.
 - d) A cost card.
- (iv) A system of recording financial and cost accounting transactions in one self-contained ledger is called:
- a) Integrated accounting system.
 - b) Control accounting.
 - c) Cost book keeping.
 - d) Interlocking accounting system.
- (v) Credit and collection cost is an item of:
- a) Selling overhead.
 - b) Prime cost.
 - c) Factory cost.
 - d) Office overhead.
- vi) The cost of the process which begins with the implementation of the decision to produce a new or improved product and ends with the commencement of formal production is called:

- a) Research cost.
 - b) Total cost.
 - c) Development cost.
 - d) Prime cost.
- (vii) Which of the following is **not** a limitation of standard costing?
- a) Heavy costs.
 - b) Frequent revision.
 - c) Users resentment.
 - d) Cost consciousness.
- (viii) The following budgets are on the basis of function except:
- a) Production budget.
 - b) Cash budget.
 - c) Research budget.
 - d) Sales budget.
- (ix) Financial viability of a project is judged by the detailed assessment of the following factors except:
- a) Technology used.
 - b) Cost of the project.
 - c) Sources of finance.
 - d) Profitability.
- (x) The rate of interest at which the present value of the cash inflows and outflows become equal given the life time of a project is called:
- a) Net present value.
 - b) Discount rate.
 - c) Pay back period.
 - d) Average rate of return.
- (xi) Which of the following is not a function of the purchases department of a large organization?
- a) What to purchase.
 - b) At what price to purchase.
 - c) Where to purchase.
 - d) Maintaining bin cards.

- (xii) Maintenance of and repairs to plant and machinery can be divided into the following sub headings except:
- a) Scrap maintenance
 - b) Running maintenance
 - c) Preventive maintenance
 - d) Breakdown maintenance
- (xiii) Machine-hour-rate is obtained by dividing the total running expenses of a machine in a period by thethe machine is expected to work.
- a) Total units.
 - b) Number of hours.
 - c) Number of people.
 - d) Value of materials.
- (xiv) A wage payment system under which a worker is paid at an hourly, daily, weekly or monthly rate is called:
- a) Time wage system.
 - b) High day rate.
 - c) Piece rate system.
 - d) Measured day rate.
- (xv) The basic function of management accounting is to:
- a) Interpret all business transactions.
 - b) Preparation of financial statements.
 - c) Assist management in performing its functions effectively.
 - d) Attain non-economic goals.

Use the following data to answer questions (xvi) - (xviii).

Given that:

Fixed expenses = Shs. 40,000

B.E.P = Shs. 100,000

- (xvi) Calculate the P/V ratio.
- a) 40%.
 - b) 50%.
 - c) 30%.
 - d) 60%.
- (xvii) Calculate the profit when sales are Shs. 200,000.
- a) Shs. 50,000.
 - b) Shs. 45,000.
 - c) Shs. 40,000.
 - d) Shs. 35,000.

- (xviii) Calculate the new B.E.P if selling price is reduced by 20%.
- a) Shs. 100,000.
 - b) Shs. 160,000.
 - c) Shs. 200,000.
 - d) Shs. 120,000.
- (xix) Which of the following statements is false?
- a) Cash flows from a project can be worked out only on the basis of certain probabilities.
 - b) Discounted cash-flow technique takes into account the time value of money.
 - c) Tax concessions have no role to play in estimating the cash flows from a project.
 - d) Depreciation is included in costs in case of accounting rate of return method.
- (xx) One of the objectives of standard costing is to:
- a) Promote and measure performance.
 - b) Set cost of manufacture.
 - c) Simplify production operations.
 - d) Control and reduce costs.