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Fundamentals of Management Accounting

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CIMA Certificate in Business Accounting

Fundamentals of Management Accounting

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About the Author

Walter Allan has lectured, written, examined and published in the fields of Management and Accounting for the past 25 years. He has lectured on CIMA courses for a number of UK private colleges and is a former CIMA examiner. He is chief executive of Galashiels Economic Consultancy, a company which specialises in professional Accountancy training.

Syllabus Guidance, Learning Objectives and Verbs

A The Certificate in Business Accounting

The Certificate introduces you to management accounting and gives you the basics of accounting and business. There are five subject areas, which are all tested by computer-based assessment (CBA). The five papers are:

- Fundamentals of Management Accounting
- Fundamentals of Financial Accounting
- Fundamentals of Business Mathematics
- Fundamentals of Business Economics
- Fundamentals of Ethics, Corporate Governance and Business Law

The Certificate is both a qualification in its own right and an entry route to the next stage in CIMA's examination structure.

The examination structure after the Certificate comprises:

- Managerial Level
- Strategic Level
- Test of Professional competence (an exam based on a case study).

This examination structure includes more advanced papers in Management Accounting. It is therefore very important that you work hard at Fundamentals of Management Accounting, not only because it is part of the Certificate, but also as a platform for more advanced studies. It is thus an important step in becoming a qualified member of the Chartered Institute of Management Accountants.

B Aims of the syllabus

The aims of the syllabus are

- to provide for the Institute, together with the practical experience requirements, an adequate basis for assuring society that those admitted to membership are competent to act as management accountants for entities, whether in manufacturing, commercial or service organisations, in the public or private sectors of the economy;
- to enable the Institute to examine whether prospective members have an adequate knowledge, understanding and mastery of the stated body of knowledge and skills;
- to complement the Institute's practical experience and skills development requirements.

C Study weightings

A percentage weighting is shown against each topic in the syllabus. This is intended as a guide to the proportion of study time each topic requires.

All topics in the syllabus must be studied, since any single examination question may examine more than one topic, or carry a higher proportion of marks than the percentage study time suggested.

The weightings *do not* specify the number of marks that will be allocated to topics in the examination.

D Learning outcomes

Each topic within the syllabus contains a list of learning outcomes, which should be read in conjunction with the knowledge content for the syllabus. A learning outcome has two main purposes:

1 to define the skill or ability that a well-prepared candidate should be able to exhibit in the examination;
2 to demonstrate the approach likely to be taken by examiners in examination questions.

The learning outcomes are part of a hierarchy of learning objectives. The verbs used at the beginning of each learning outcome relate to a specific learning objective, e.g. Evaluate alternative approaches to budgeting.

The verb 'evaluate' indicates a high-level learning objective. As learning objectives are hier-archical, it is expected that at this level students will have knowledge of different budget-ing systems and methodologies and be able to apply them.

A list of the learning objectives and the verbs that appear in the syllabus learning outcomes and examinations follows.

Learning objectives	*Verbs used*	*Definition*
1 Knowledge		
What you are expected to know	List	Make a list of
	State	Express, fully or clearly, the details of/facts of
	Define	Give the exact meaning of
2 Comprehension		
What you are expected to understand	Describe	Communicate the key features of
	Distinguish	Highlight the differences between
	Explain	Make clear or intelligible/State the meaning of
	Identify	Recognise, establish or select after consideration
	Illustrate	Use an example to describe or explain something

3   Application

How you are expected to apply your knowledge	Apply	To put to practical use
	Calculate/ compute	To ascertain or reckon mathematically
	Demonstrate	To prove with certainty or to exhibit by practical means
	Prepare	To make or get ready for use
	Reconcile	To make or prove consistent/compatible
	Solve	Find an answer to
	Tabulate	Arrange in a table

4   Analysis

How you are expected to analyse the detail of what you have learned	Analyse	Examine in detail the structure of
	Categorise	Place into a defined class or division
	Compare and contrast	Show the similarities and/or differences between
	Construct	To build up or compile
	Discuss	To examine in detail by argument
	Interpret	To translate into intelligible or familiar terms
	Produce	To create or bring into existence

5   Evaluation

How you are expected to use your learning to evaluate, make decisions or recommendations	Advise	To counsel, inform or notify
	Evaluate	To appraise or assess the value of
	Recommend	To advise on a course of action

Computer-based assessment

CIMA has introduced computer-based assessment (CBA) for all subjects at Certificate level. The website (http://www.cimaglobal.com/students/admin/assessment/computer/questions.htm) says

> Objective questions are used. The most common type is 'multiple choice', where you have to choose the correct answer from a list of possible answers, but there are a variety of other objective questions types that can be used within the system. These include true/false questions, matching pairs of text and graphic, sequencing and ranking, labelling diagrams and single and multiple numeric entry.

> Candidates answer the questions by either pointing and clicking the mouse, moving objects around the screen, typing numbers, or a combination of these responses. Try our online demo at [http://www.cimaglobal.com] to get a feel for how the technology will work.

> The CBA system can ensure that a wide range of the syllabus is assessed, as a pre-determined number of questions from each syllabus area (dependent upon the syllabus weighting for that particular area) are selected in each assessment.

There are two types of questions which were previously involved in objective testing in paper-based exams and which are not at present possible in a CBA. The actual drawing

of graphs and charts is not yet possible. Equally there will be no questions calling for – comments to be written by students. Charts and interpretations remain on many syllabi and will be examined at Certificate level but using other methods.

For further CBA practice, CIMA Publishing is producing CIMA e-success CD-ROMs for all Certificate level subjects. These are available at www.cimapublishing.com.

Fundamentals of Management Accounting and computer-based assessment

The assessment for Fundamentals of Management Accounting is a 2 hour computer-based assessment comprising 50 compulsory questions, with one or more parts. Single part questions are generally worth 1–2 marks each, but two and three part questions may be worth 4 or 6 marks. There will be no choice and all questions should be attempted if time permits. CIMA are continuously developing the question styles within the CBA system and you are advised to try the on-line website demo at www.cima-global.com, to both gain familiarity with assessment software and examine the latest style of questions being used.

Fundamentals of Management Accounting

Syllabus outline

The syllabus comprises:

Topic and study weighting

A	Cost Determination	25%
B	Cost Behaviour and Break-even Analysis	10%
C	Standard Costing	15%
D	Cost and Accounting Systems	30%
E	Financial Planning and Control	20%

Learning aims

This syllabus aims to test student's ability to:

- explain and use concepts and processes to determine product and service costs;
- explain direct, marginal and absorption costs and their use in pricing;
- apply cost–volume–profit (CVP) analysis and interpret the results;
- apply a range of costing and accounting systems;
- explain the role of budgets and standard costing within organisations;
- prepare and interpret budgets, standard costs and variance statements.

Assessment strategy

There will be a computer-based assessment of 2 hours duration, comprising 50 compulsory questions, each with one or more parts.
A variety of objective test question types and styles will be used within the assessment.

Learning outcomes and indicative syllabus content

A Cost Determination – 25%

Learning outcomes

On completion of their studies students should be able to:

- explain why organisations need to know how much products, processes and services cost and why they need costing systems;
- explain the idea of a 'cost object';
- explain the concept of a direct cost and an indirect cost;
- explain why the concept of 'cost' needs to be qualified as direct, full, marginal and so on, in order to be meaningful;
- distinguish between the historical cost of an asset and the economic value of an asset to an organisation;
- apply first-in-first-out (FIFO), last-in-first-out (LIFO) and average cost (AVCO) methods of accounting for stock, calculating stock values and related gross profit;
- explain why FIFO is essentially a historical cost method, while LIFO approximates economic cost;
- prepare cost statements for allocation and apportionment of overheads, including between reciprocal service departments;
- calculate direct, variable and full costs of products, services and activities using overhead absorption rates to trace indirect costs to cost units;
- explain the use of cost information in pricing decisions, including marginal cost pricing and the calculation of 'full cost' based prices to generate a specified return on sales or investment.

Indicative syllabus content

- Classification of costs and the treatment of direct costs (specifically attributable to a cost object) and indirect costs (not specifically attributable) in ascertaining the cost of a 'cost object', for example a product, service, activity, customer.
- Cost measurement: historical versus economic costs.
- Accounting for the value of materials on FIFO, LIFO and AVCO bases.
- Overhead costs: allocation, apportionment, re-apportionment and absorption of overhead costs. Note: The repeated distribution method only will be examined for reciprocal service department costs.
- Marginal cost pricing and full cost pricing to achieve specified return on sales or return on investment.

Note: Students are not expected to have a detailed knowledge of activity based costing (ABC).

B Cost Behaviour and Break-even Analysis – 10%

Learning outcomes

On completion of their studies students should be able to:

- explain how costs behave as product, service or activity levels increase or decrease;
- distinguish between fixed, variable and semi-variable costs;
- explain step costs and the importance of time-scales in their treatment as either variable or fixed;

- compute the fixed and variable elements of a semi-variable cost using the high–low method and 'line of best fit' method;
- explain the concept of contribution and its use in cost–volume–profit (CVP) analysis;
- calculate and interpret the break-even point, profit target, margin of safety and profit–volume ratio for a single product or service;
- prepare break-even charts and profit–volume graphs for a single product or service;
- calculate the profit maximising sales mix for a multi-product company that has limited demand for each product and one other constraint or limiting factor.

Indicative syllabus content

- Fixed, variable and semi-variable costs.
- Step costs and the importance of time-scale in analysing cost behaviour.
- High–low and graphical methods to establish fixed and variable elements of a semi-variable cost. Note: regression analysis is not required.
- Contribution concept and CVP analysis.
- Breakeven charts, profit–volume graphs, break-even point, profit target, margin of safety, contribution/sales ratio.
- Limiting factor analysis.

C Standard Costing – 15%

Learning outcomes

On completion of their studies students should be able to:

- explain the difference between ascertaining costs after the event and planning by establishing standard costs in advance;
- explain why planned standard costs, prices and volumes are useful in setting a bench-mark for comparison and so allowing managers' attention to be directed to areas of the business that are performing below or above expectation;
- calculate standard costs for the material, labour and variable overhead elements of cost of a product or service;
- calculate variances for materials, labour, variable overhead, sales prices and sales volumes;
- prepare a statement that reconciles budgeted contribution with actual contribution;
- interpret statements of variances for variable costs, sales prices and sales volumes including possible inter-relations between cost variances, sales price and volume variances, and cost and sales variances;
- describe the possible use of standard labour costs in designing incentive schemes for factory and office workers.

Indicative syllabus content

- Principles of standard costing.
- Preparation of standards for the variable elements of cost: material, labour, variable overhead.
- Variances: materials – total, price and usage; labour – total, rate and efficiency; variable overhead – total, expenditure and efficiency; sales – sales price and sales

volume contribution. Note: Students will be expected to calculate the sales volume–contribution variance.
- Reconciliation of budgeted and actual contribution.
- Piecework and the principles of incentive schemes based on standard hours versus actual hours taken. Note: The details of a specific incentive scheme will be provided in the examination.

D Costing and Accounting Systems – 30%

Learning outcomes

On completion of their studies students should be able to:

- explain the principles of manufacturing accounts and the integration of the cost accounts with the financial accounting system;
- prepare a set of integrated accounts, given opening balances and appropriate transactional information, and show standard cost variances;
- compare and contrast job, batch, contract and process costing;
- prepare ledger accounts for job, batch and process costing systems;
- prepare ledger accounts for contract costs;
- explain the difference between subjective and objective classifications of expenditure and the importance of tracing costs both to products/services and to responsibility centres;
- construct coding systems that facilitate both subjective and objective classification of costs;
- prepare financial statements that inform management;
- explain why gross revenue, value-added, contribution, gross margin, marketing expense, general and administration expense, and so on might be highlighted in management reporting;
- compare and contrast management reports in a range of organisations including commercial enterprises, charities and public sector undertakings.

Indicative syllabus content

- Manufacturing accounts including raw material, work-in-progress, finished goods and manufacturing overhead control accounts.
- Integrated ledgers including accounting for over- and under-absorption of production overhead.
- The treatment of variances as period entries in integrated ledger systems.
- Job, batch, process and contract costing. Note: Only the average cost method will be examined for process costing but students must be able to deal with differing degrees of completion of opening and closing stocks, normal gains and abnormal gains and losses, and the treatment of scrap value.
- Subjective, objective and responsibility classifications of expenditure and the design of coding systems to facilitate these analyses.
- Cost accounting statements for management information in production and service companies and not-for-profit organisations.

E Financial Planning and Control – 20%

Learning outcomes

On completion of their studies students should be able to:

- explain why organisations set out financial plans in the form of budgets, typically for a financial year;
- prepare functional budgets for material usage and purchase, labour and overheads, including budgets for capital expenditure and depreciation;
- prepare a master budget: income statement, balance sheet and cash flow statement, based on the functional budgets;
- interpret budget statements and advise managers on financing projected cash shortfalls and/or investing projected cash surpluses;
- prepare a flexible budget based on the actual levels of sales and production and calculate appropriate variances;
- compare and contrast fixed and flexed budgets;
- explain the use of budgets in designing reward strategies for managers.

Indicative syllabus content

- Budgeting for planning and control.
- Budget preparation, interpretation and use of the master budget.
- Reporting of actual against budget.
- Fixed and flexible budgeting.
- Budget variances.
- Interpretation and use of budget statements and budget variances.

Examination Techniques

Computer-based examinations

Ten Golden Rules

1 Make sure you are familiar with software before you start exam. You cannot speak to invigilator once you have started.
2 These exam practice kits give you plenty of exam style questions to practise.
3 Attempt all questions, there is no negative marking.
4 Double check your answer before you put in final alternative.
5 On multiple choice questions, there is only one correct answer.
6 Not all questions will be MCQs – you may have to fill in missing words or figures.
7 Identify the easy questions first, get some points on the board to build up your confidence.
8 Try and allow five minutes at the end to check your answers and make any corrections.
9 If you don't know the answer, try process of elimination. Sadly there is no phone a friend!!
10 Take scrap paper, pen and calculator with you. Work out answer on paper first if it is easier for you.

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Cost Behaviour

1

⟨?⟩ Concepts and definitions questions

1.1   Distinguish between

    (i)   Financial accounting
    (ii) Cost accounting
    (iii) Management accounting

1.2   State six different benefits of cost accounting.

    (i)
    (ii)
    (iii)
    (iv)
    (v)
    (vi)

1.3   Complete the following statements.

    (i)   A _____ is a unit of product or service in relation to which costs are ascertained.
    (ii) A _____ cost is an expenditure which can be economically identified with and specifically measured in respect to a relevant cost object.
    (iii) _____ cost is the total cost of direct material, direct labour and direct expenses.
    (iv) An _____ or _____ cost is an expenditure on labour, materials or services which cannot be economically identified with a specific saleable cost unit.
    (v) A cost _____ is a production or service location, function, activity or item of equipment for which costs are accumulated.
    (vi) A _____ cost is a cost which is incurred for an accounting period and which tends to be unaffected by fluctuations in the levels of activity.
    (vii) A _____ cost is a cost which is directly related to output.
    (viii) An example of a fixed cost would be
    (ix) An example of a variable cost would be
    (x) An example of a semi-fixed/semi-variable cost would be

1.4   The relationship between costs Y and activity X is in the form:

$Y = a + bX$

$a =$

$b =$

1.5   Use the high–low method to calculate the fixed and variable elements of the following costs.

	Units	*Cost*
July	400	£1,000
August	500	£1,200
September	600	£1,400
October	700	£1,600
November	800	£1,800
December	900	£2,000

1.6   Distinguish between

  (i)   Interpolation
  (ii) Extrapolation

1.7   State two advantages and two disadvantages of regression analysis.

1.8   State four limitations of using historic costs.

  (i)
  (ii)
  (iii)
  (iv)

1.9   The variable production cost per unit of product B is £2 and the fixed production overhead is £4000. The total production cost of producing 3,000 units of B in a period is £_____.

1.10   What is a step cost and give an example of one?

✓ Concepts and definitions solutions

1.1 (i) "Financial accounting" is the recording of financial transactions of a firm and a summary of their financial statements within an accounting period for the use of individuals and institutions who wish to analyse and interpret these results.

(ii) "Cost accounting" involves a careful evaluation of the resources used within an organisation. The techniques employed help to provide financial information about the performance of a business and the likely direction which it will take.

(iii) "Management accounting" is essentially concerned with offering advice to management based on financial information gathered and would include budgeting, planning and decision-making.

1.2 Benefits of cost accounting

(i) Discloses profitable and unprofitable parts of the business
(ii) Identifies waste and inefficiency
(iii) Estimates and fixes selling prices
(iv) Values stocks
(v) Develops budgets and standards
(vi) Analyses changes in profits.

1.3 (i) Cost unit
(ii) Direct
(iii) Prime
(iv) Overhead or Indirect
(v) Centre
(vi) Fixed
(vii) Variable
(viii) Rent
(ix) Raw materials
(x) Telephone or Electricity.

1.4 Fixed and variable costs

a = Fixed cost
b = Variable cost

1.5 High–low method

	Units	Cost
Highest month	900	£2,000
Lowest month	400	£1,000
	500	£1,000

The additional cost between the highest and lowest month.

$$= \frac{£1,000}{500 \text{ units}} = £2 \text{ per unit}$$

So taking either higher or lower number

Higher 900 × £2 = £1,800   so fixed cost = £200
Lower 400 × £2 = £800   so fixed cost = £200

Under exam conditions choose number which is easier to calculate.

1.6 Interpolation and Extrapolation

    (i) Regression lines can be used to calculate intermediate values of the variables. This is known as Interpolation.

    (ii) Where regression lines extend beyond the range of the values used in their calculation, it is possible to calculate values of variables outside the limits of the data, this is known as Extrapolation.

1.7 Advantages and disadvantages of regression analysis

Advantages

    (i) Overcomes limitations of high–low method by considering other values within the range.

    (ii) Provides the best estimates of costs from historic data.

Disadvantages

    (i) Can only be used on historic data.

    (ii) Assumes linear relationships with all variables.

1.8 Limitations of using historic costs

    (i) Difficult and costly to obtain sufficient data to be sure that representative sample is used.

    (ii) Implies a continuing relationship of costs to volume.

    (iii) Based on linear relationship between costs and activity.

    (iv) Events in the past may not be representative of the future.

1.9 Total production cost = $(3{,}000 \times £2) + £4{,}000 = £10{,}000$.

1.10 Step cost is a cost which rise in a series of steps, for example, the rent of a second factory.

? **Multiple choice questions**

1.1   Which of the following are prime costs?

   (i)   Direct materials
  (ii)   Direct labour
 (iii)   Indirect labour
 (iv)   Indirect expenses

   A   (i) and (ii)
   B   (i) and (iii)
   C   (ii) and (iii)
   D   (ii) and (iv)

1.2   Which of the following could not be classified as a cost unit?

   A   Ream of paper
   B   Barrel of beer
   C   Chargeable man-hour
   D   Hospital

1.3   When comparing the profitability of different stores, a firm charges rent as an expense in all of them even though some are owned and some rented. Under these circumstances rent is:

   A   An avoidable cost
   B   A relevant cost
   C   A notional cost
   D   A fixed cost

1.4   Which of the following would be classed as indirect labour?

   A   Assembly workers in a car plant
   B   Bricklayers in a building company
   C   Store assistants in a factory
   D   An auditor in a firm of accountants

1.5   Which of the following would not be classified as a cost centre in a hotel?

   A   Restaurant
   B   Rooms
   C   Bar
   D   Meals served

1.6   The information below shows the number of calls made and the monthly telephone bill for the first quarter of 2005:

Month	No. of calls	Cost
January	400	£1,050
February	600	£1,700
March	900	£2,300

Using the high–low method the costs could be subdivided into:

A Fixed cost £50   Variable cost £2.50
B Fixed cost £50   Variable cost £25
C Fixed cost £25   Variable cost £2.50
D Fixed cost £25   Variable cost £25

1.7 The following data relate to two output levels of a department:

Machine hours	18,000	20,000
Overheads	£380,000	£390,000

The variable overhead rate was £5 per hour.
The amount of fixed overhead was

A £230,000
B £240,000
C £250,000
D £290,000

1.8 Fixed costs are conventionally deemed to be:

A Constant per unit of output
B Constant in total when production volume changes
C Outside the control of management
D Those unaffected by inflation

1.9 The high–low method of cost estimation can be used to

A Calculate the budget cost for the actual activity
B Calculate the highest and lowest costs in the budget period
C Measure the actual cost for the budget activity
D Predict the range of costs expected in the budget period

1.10 Which of the following pairs are the best examples of semi-variable costs?

A Rent and rates
B Labour and materials
C Electricity and gas
D Road fund licence and petrol

☑ Multiple choice solutions

1.1 **A**

Prime costs consist of direct materials and direct labour.

1.2 **D**

Alternatives A, B and C are all examples of cost units. A hospital might be classified as a cost centre.

1.3 **C**

Where a cost is used in performance measurement to represent the cost of using resources which have no actual cost, this is known as a notional cost. It is used for comparison purposes.

1.4 **C**

Alternatives A, B and C are all direct costs. A stores assistant is an example of an indirect cost.

1.5 **D**

This question relates to costs in a hotel. Alternatives A, B and C are all department or cost centres. A meal served would be a cost unit.

1.6 **A**

	Units	*Cost*
Highest	900	£2,300
Lowest	400	£1,050
	500	£1,250

$$\text{Variable cost} = \frac{£1,250}{500} = £2.50$$

Fixed cost = Total cost − variable cost
= £1,050 − (400 × £2.50)
= £1,050 − £1,000
= £50

So fixed cost = £50 and variable cost = £2.50.

1.7 **D**

The calculation is as follows:
Total cost for 18,000 hours = £380,000
Variable cost = 18,000 × 5 =   £90,000
Fixed costs   = £290,000

1.8 **B**

The total amount of fixed costs remains unchanged when production volume changes, therefore the unit rate fluctuates.

1.9   **A**

The high–low method of cost estimation can be used to calculate the budget cost for the actual activity, that is, distinguish between fixed and variable cost.

1.10   **C**

The best examples of semi-variable costs are electricity and gas, since there is a cost for the use of the service which is fixed and a further variable cost based on usage.

Accounting for the Value of Inventories

2

Concepts and definitions questions

2.1   What is a bin card?

2.2   What are the three methods of stock valuation?

  (i)
 (ii)
(iii)

2.3   In January 2005, 1,000 tonnes of a material were purchased as follows:

3rd January   200 tonnes at £50 per tonne
8th January   400 tonnes at £60 per tonne
17th January   400 tonnes at £70 per tonne

During the same period four material requisitions were completed for 200 tonnes each on the 4th, 12th, 18th and 26th of the month. Using the information given, calculate the quantity and value of closing stock using the FIFO method at the end of January.

2.4   Using the information in Question 2.3, calculate the quantity and value of closing stock using LIFO method.

2.5   Using the information in Question 2.3, calculate the value and quantity of closing stock using weighted average method.

2.6   What are the advantages and disadvantages of FIFO?

2.7   What are the advantages and disadvantages of LIFO?

2.8   What are the advantages and disadvantages of weighted average?

2.9   What is a perpetual inventory?

2.10 State four advantages of using a material code.

  (i)
 (ii)
(iii)
(iv)

✅ Concepts and definitions solutions

2.1 A bin card is a record of receipts, issues and balances of the quantity of an item of stock handled by a store.

2.2 The three methods of stock valuation are

   (i)   FIFO – First In First Out
  (ii)   LIFO – Last In First Out
 (iii)   Weighted average cost.

2.3 Stock valuation using FIFO

Date	Receipts (Issues)			Balance (Quantity)		
	Quantity	Price (£)	Value (£)	At 50	At 60	At 70
3rd Jan	200	50	10,000	200		
4th Jan	(200)	50	(10,000)	(200)		
8th Jan	400	60	24,000		400	
12th Jan	(200)	60	(12,000)		(200)	
17th Jan	400	70	28,000			400
18th Jan	(200)	60	(12,000)		(200)	
26th Jan	(200)	70	(14,000)			(200)
Closing Balance 31st Jan	200	70	14,000	–	–	200

2.4. Stock valuation using LIFO

Date	Receipts (Issues)			Balance (Quantity)		
	Quantity	Price (£)	Value (£)	At 50	At 60	At 70
3rd Jan	200	50	10,000	200		
4th Jan	(200)	50	(10,000)	(200)		
8th Jan	400	60	24,000		400	
12th Jan	(200)	60	(12,000)		(200)	
17th Jan	400	70	28,000			400
18th Jan	(200)	70	(14,000)			(200)
26th Jan	(200)	70	(14,000)			(200)
Closing Balance 31st Jan	200	60	12,000	–	200	–

2.5   Stock valuation using weighted average

Date	Receipts (Issues)		
	Quantity	**Price (£)**	**Value (£)**
3rd Jan	200	50	10,000
4th Jan	(200)	50	(10,000)
8th Jan	400	60	24,000
12th Jan	(200)	60	(12,000)
17th Jan	400	70	28,000
Balance	600	66.66	40,000
18th Jan	(200)	66.66	(13,333)
26th Jan	(200)	66.66	(13,333)
Closing Balance 31st Jan	200	66.66	13,333

2.6   Advantages and disadvantages of FIFO

Advantage

(i)   Produces realistic stock figures.

Disadvantages

(i)   Produces out-of-date production costs.
(ii)   Complicates stock records since stock must be analysed by delivery.

2.7   Advantages and disadvantages of LIFO

Advantage

(i)   Produces realistic production cost, therefore more realistic profit figures.

Disadvantages

(i)   Produces unrealistic stock values.
(ii)   Complicates stock records as stock must be analysed by delivery.

2.8   Advantages and disadvantages of weighted average price

Advantage

(i)   Simple to operate, no need to analyse stock with every delivery.

Disadvantage

(i)   Neither stock figures nor production costs are realistic.

2.9   Perpetual inventory

Perpetual inventory is the recordings of receipts and issues as they occur showing the balances of individual items of stock in terms of quantity and value.

2.10   Material coding system

Advantages

(i)   Reduces clerical effort
(ii)   Avoids ambiguity
(iii)   Easier for referral
(iv)   Essential when handling mechanical or electronic data.

? **Multiple choice questions**

Questions 2.1 and 2.2 are based on the following information:

	Receipts	*Issues*
Opening balance	200 at £5	7th 400
5th	300 at £4.50	23rd 400
12th	100 at £6	30th 200
22nd	400 at £5.50	
29th	200 at £7	

2.1 If a FIFO system of stock valuation were used, the value of stock at the end of the month would be

    A   £1,000
    B   £1,100
    C   £1,200
    D   £1,400

2.2 If a LIFO method of stock valuation were used, the cost of production in the month would be

    A   £5,150
    B   £5,350
    C   £5,450
    D   £5,550

2.3 A chemical is bought in a 100-litre container costing £400. Decanting this into one litre bottles results in a 0.5% loss. To cover this loss, each litre bottle would need to be costed at:

    A   £3.98
    B   £4.00
    C   £4.02
    D   £4.04

2.4 A system which provides a continuous record of the balance of each inventory system is known as

    A   JIT Management
    B   An imprest system
    C   A perpetual inventory system
    D   None of the above

2.5 When goods are delivered by a supplier, the storekeeper will then raise

    A   An invoice
    B   A customs certificate
    C   A goods received note
    D   A perpetual inventory system

✅ **Multiple choice solutions**

2.1 **D**

Receipts = 1,200
Issues = 1,000
Closing stock (200 × £7) = £1,400

2.2 **C**

	£
Total value of receipts	6,550
Less: Closing stock	

	£
100 × £5	500
100 × £6	600
	1,100
	5,450

2.3 **C**

Each bottle needs to be issued at $\dfrac{400}{99.5}$ = £4.02.

2.4 **C**

2.5 **C**

2.6 **B**

Reorder when level is maximum usage in maximum lead time.
Maximum usage   175 per day
Maximum lead time   16 days
So 175 × 16 = 2,800.

2.7 **C**

Number in stock when order is placed	2,800 (see Question 4.6)
Minimum lead time	3,000
Minimum usage in minimum lead time	(90 × 10) (900)
	4,900

2.8 **D**

Reorder level	2,400
Less: Maximum usage × maximum lead time	2,000
(400 × 5)	
So 400 units.	400

2.9 **D**

The size of the buffer stock is a function of three factors, variability of demand, cost of holding stock and cost of stock-outs. Reorder levels do not determine stock levels, they are also a function of the first three.

2.10 **A**

This is a question based on the economic order quantity. Normally we are asked to calculate the value of the EOQ but this time it is given. The unknown variable here is holding costs which we need to calculate.

$$\text{EOQ} = \sqrt{\frac{2 \times \text{CO D}}{\text{CH}}}$$

$$400 = \sqrt{\frac{2 \times 20 \times 24,000}{\text{CH}}}$$

$$400 = \sqrt{\frac{960,000}{\text{CH}}}$$

$$160,000 = \frac{960,000}{\text{CH}}$$

$$\text{CH} = \frac{960,000}{160,000} = \text{£6}$$

Overhead Costs: Allocation, Apportionment and Absorption

3

? Concepts and definitions questions

3.1   What are the three main ways in which indirect production costs are incurred?

  (i)
 (ii)
(iii)

3.2   To attribute overhead costs to cost units, what are the five steps which must be taken?

  (i) *Step 1*
 (ii) *Step 2*
(iii) *Step 3*
(iv) *Step 4*
 (v) *Step 5*

3.3   By what basis would you apportion the following cost?

  (i) Rent
 (ii) Power
(iii) Depreciation
(iv) Cost of canteen facility
 (v) Machine maintenance labour
(vi) Supervision

3.4   A company occupies 100,000 sq. ft with an annual rent of £500,000. Department A takes up 30,000 sq. ft, Department B uses 20,000 sq. ft and Department C and D use 25,000 sq. ft each. How much rent should be allocated to Department A?

3.5 A company has three production departments A, B and C and two service departments X and Y.

Overheads have been attributed to these departments as follows:

Department	£
A	100,000
B	75,000
C	50,000
X	25,000
Y	10,000

An analysis of the services provided by each service department shows the following percentages of total time spent for the benefit of each department.

Service department	Production			Service department	
	A	B	C	X	Y
X	30	30	20	–	20
Y	50	10	30	10	–

Calculate the costs attributed to production departments A, B and C.

3.6 State five methods by which overheads can be absorbed into cost units.

  (i)
  (ii)
  (iii)
  (iv)
  (v)

Questions 3.7–3.10 are based on the following information:

A manufacturing company uses pre-determined rates for absorbing overheads based on the budgeted level of activity. A rate of £22 per labour hour has been calculated for the Assembly Department for which the following overhead expenditures at various activity levels have been estimated.

Assembly department total overheads £	Number of labour hours
338,875	14,500
347,625	15,500
356,375	16,500

3.7 Calculate (i) the variable overhead absorption rate per labour hour and (ii) the estimated total fixed overheads.

3.8 Calculate the budgeted level of activity in labour hours.

3.9 Calculate the amount of under/over recovery of overheads, if the actual labour hours were 15,850 and actual overheads were £355,050.

3.10 What are the arguments both for and against using departmental absorption rates as opposed to a single factory-wide rate?

✅ Concepts and definitions solutions

3.1   The three main ways in which indirect production costs incurred are

   (i)   Production activities, for example, supervision
  (ii)   Service activities, for example, stores
 (iii)   Establishment costs, for example, heating and lighting.

3.2   Five steps taken to attribute overhead costs to cost units are

Step 1 – Collect production overhead by item
Step 2 – Establish cost centres
Step 3 – Allocate and apportion overhead costs to cost centres
Step 4 – Apportion service cost centre costs to production cost centres
Step 5 – Absorb production cost centre costs into cost units.

3.3   Cost apportionment

   (i)   Rent – Floor space
  (ii)   Power – Kilowatt hours
 (iii)   Depreciation – Capital value
  (iv)   National insurance – No. of workers
   (v)   Machine maintenance labour – Machine maintenance hours
  (vi)   Supervision – No. of workers.

3.4   Rent allocation

Total occupancy	= 100,000 sq. ft
Annual rent	= £500,000
Cost per sq. ft	= £5
Department A occupancy	= 30,000 sq. ft
Department A rent (30,000 × £5)	= 150,000

3.5   Production and services department

	Production (£)			Service (£)	
	A	*B*	*C*	*X*	*Y*
Initial Allocation	100,000	75,000	50,000	25,000	10,000
Apportion X	7,500	7,500	5,000	(25,000)	5,000
Apportion Y	7,500	1,500	4,500	1,500	(15,000)
Apportion X	450	450	300	(1,500)	300
Apportion Y	150	30	90	30	(300)
Apportion X	11	11	8	*(30)	–
Total charge for overhead	115,611	84,491	59,898	–	–

* When the service department cost reduces to a small amount, the final apportionment is adjusted for roundings.

3.6   Methods by which overheads can be absorbed into cost units

    (i)   Rate per unit
    (ii)   Percentage of prime cost
    (iii) Percentage of direct wages
    (iv)   Direct labour hour rate
    (v)   Machine hour rate.

3.7   Variable and fixed overheads

    (i)   Variable overhead absorption rate using high–low method

$$\frac{£356{,}375 - £338{,}875}{16{,}500 - 14{,}500} = £8.75 \text{ per hour}$$

    (ii)   At 14,500 labour hours

	£
Total overheads expected	338,875
Variable overheads (14,500 × £8.75)	(126,875)
Estimated total fixed overheads	212,000

3.8   Budgeted level of labour hours

Step 1 $\dfrac{\text{Total budgeted overheads}}{x} = £22 \text{ per hour}$

Step 2 $\dfrac{212{,}000 + 8.75x}{x} = 22$

Step 3   Multiply each side by x
         so $212{,}000 + 8.75x = 22x$

Step 4   Subtract each side by $8.75x$
         $212{,}000 = 13.25x$

Step 5 $\dfrac{212{,}000}{13.25} = 16{,}000 \text{ labour hours.}$

3.9   *Under/over absorption*

	£
Actual overheads	355,050
Absorbed overheads (15,850 × £22)	(348,700)
Under recovery of overheads	6,350

3.10   Arguments for and against departmental absorption rates:

For

    (i)   Costings of products are more accurate since each product can be charged with the relevant amount of overheads from each department.
    (ii)   Cost control is improved since under/over recoveries can be calculated for each department.

Against

    (i)   A single factory-wide rate is simpler, less time-consuming and cheaper.
    (ii)   If departmental rates are not kept under constant review, they may give misleading costing information.

❓ *Multiple choice questions*

3.1   What are the three objectives of accounting for overhead costs?

  (i)   To identify costs in relation to output products or services
 (ii)   To identify costs in relation to activities and divisions of the organisation
(iii)   To identify and control overhead costs
(iv)   To identify and control direct costs

A   (i) and (ii)
B   (i), (ii) and (iii)
C   (i), (ii) and (iv)
D   (i), (ii), (iii) and (iv)

3.2   There are three departments in a factory.

Department A occupies 2,000 sq. ft
Department B occupies 2,500 sq. ft
Department C occupies 500 sq. ft
Annual rent = £40,000

The combined rent of Department A and B is

A   £16,000
B   £20,000
C   £24,000
D   £36,000

3.3   A company has four production departments. Fixed costs are as follows:

Department	£	Hours taken
A	10,000	5
B	5,000	5
C	4,000	4
D	6,000	3

The company produces one product and the time spent in each department is shown above. If overhead is recovered on the basis of labour hours and budgeted production is 2,000 units, the fixed cost per unit is

A   £3
B   £12
C   £12.50
D   £17.50

3.4   Budgeted overhead   = £100,000
Actual overhead   = £90,000
Budgeted labour hours = 20,000
Actual labour hours   = 21,000

Calculate the amount of under/over recovery of overheads.

A   Over absorption £15,000
B   Over absorption £5,000
C   Under absorption £15,000
D   Under absorption £5,000

3.5   A method of accounting for overheads involes attributing them to cost units using predetermined rates. This is known as

   A   overhead allocation
   B   overhead apportionment
   C   overhead absorption
   D   overhead analysis

3.6   A company absorbs overheads on standard machine hours which were budgeted at 11,250 with overheads of £258,750. Actual results were 10,980 standard machine hours with overheads of £254,692.
   Overheads were:

   A   under-absorbed by £2,152
   B   over-absorbed by £4,058
   C   under-absorbed by £4,058
   D   over-absorbed by £2,152

3.7   If a company recovers its overheads on the basis of direct labour hours, how much will the labour hours rate be if the cost centre overhead is £100,000 and 550 hours are worked?

   A   £121.21
   B   £141.41
   C   £161.61
   D   £181.81

3.8   A company has four production departments. Fixed costs have been apportioned between them as follows:

Department	A	B	C	D
Fixed costs	£20,000	£8,000	£6,000	£1,000

   The time taken in each department to manufacture the company's only product is

Department	Hours
A	5
B	4
C	3
D	1

   If the company recovers overheads on the basis of labour hours and expects to produce 1,000 units, then the fixed cost per unit is

   A   £25
   B   £30
   C   £35
   D   £40

3.9   A method of dealing with overheads involves spreading common costs over cost centres on the basis of benefit received. This is known as

   A   Overhead absorption
   B   Overhead apportionment
   C   Overhead allocation
   D   Overhead analysis

3.10   An overhead absorption rate is used to

    (i)   Share-out common costs over benefiting cost centres
   (ii)   Find the total overheads for a cost centre
  (iii)   Charge overheads to products
  (iv)   Control overhead costs

A   (i), (ii) and (iii)
B   (i), (ii) and (iv)
C   (ii), (iii) and (iv)
D   (i), (ii), (iii) and (iv)

✅ Multiple choice solutions

3.1 B

Alternatives (i), (ii) and (iii) are all concerned with overheads, direct costs are prime costs.

3.2 D

$$\text{Rent Department A} = \frac{2,000}{5,000} \times £40,000 = £16,000$$

$$\text{Rent Department B} = \frac{2,500}{5,000} \times £40,000 = £20,000$$

$$\begin{aligned}\text{So Department A + Department B} \quad &= £16,000 + £20,000 \\ &= £36,000\end{aligned}$$

3.3 C

$$\begin{aligned}\text{Total fixed cost} \quad &= £10,000 + £5,000 + £4,000 + £6,000 \\ &= £25,000\end{aligned}$$

Budgeted production = 2,000

$$\begin{aligned}\text{Fixed cost per unit} \quad &= \frac{£25,000}{2,000} \\ &= £12.50\end{aligned}$$

3.4 A

Budgeted overhead rate per hour

$$= \frac{\text{Budgeted overhead}}{\text{Budgeted hours}} = \frac{£100,000}{20,000} = £5$$

Actual hours × standard rate (21,000 × £5) = £105,000
Actual overhead   =   £90,000
Over absorption   £15,000

3.5 C

Overhead allocation is the allotment of whole items of cost to cost units or cost centres. Overhead apportionment is the sharing out of costs over a number of cost centres according to the benefit used. Overhead analysis refers to the whole process of recording and accounting for overheads.

3.6 A

$$\text{Overhead absorption rate} = \frac{£258,750}{11,250} = £23 \text{ per standard machine hour}$$

	£
Overhead absorbed = 10,980 std. hours × £23	252,540
Overhead incurred	254,692
Under absorption	2,152

3.7   **D**

$$\text{Labour hours rate} = \frac{\pounds100,000}{550 \text{ hours}}$$
$$= \pounds181.81$$

3.8   **C**

Total departmental fixed costs
£20,000
 £8,000
 £6,000
 £1,000
£35,000

No. of units = 1,000

Fixed cost per unit = £35 per unit

3.9   **B**

A method of dealing with overheads involves spreading common costs over cost centres on the basis of benefit received is known as overhead apportionment.

3.10   **C**

An overhead absorption rate is used to do everything except share-out common costs over benefiting cost centres. As we saw from Question 3.9, this is overhead apportionment.

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Absorption and Marginal Costing

4

? Concepts and definitions questions

4.1 Absorption costing

A company has a budgeted overhead of £60,000 based on 12,000 machine hours. In the month of January, if the company incurred a overhead of £5,500 based on 1,100 machine hours, calculate the overhead under/over absorption.

4.2 Distinguish between absorption costing and marginal costing.

4.3 Company X produces and sells a single product with the following budget.

	£
Selling price	12
Direct materials	3
Direct wages	2 per unit
Variable overhead	2 per unit
Fixed overhead	10,000 per month

The fixed overhead absorption rate is based on 5,000 units being sold. Calculate the profit for the period when 4,750 units were produced and sold using:

 (i) Marginal costing
(ii) Absorption costing

4.4 State whether profits will be higher using absorption costing instead of marginal costing when

  (i) Closing stock is higher than opening stock
 (ii) Opening stock is higher than closing stock
(iii) Opening stock is equal to closing stock

4.5 What is contribution?

4.6 State three advantages marginal costing has over absorption costing.

 (i)
 (ii)
 (iii)

4.7   State three advantages absorption costing has over marginal costing.

  (i)

 (ii)

(iii)

4.8   If absorption costing shows a profit of £35,000 higher than marginal costing and clos-
ing stocks are 1,000 units, what can we assume from this?

Questions 4.9 and 4.10 are based on the following standard cost card:

	£
Materials	2
Labour	3
Variable overhead	3
Fixed production overhead	4
Variable selling cost	1
Fixed selling overhead	2
Profit	5
Selling price	20

Both types of fixed overheads were based on a budgeted production of 10,000 units per
annum.

4.9   If production was 11,000 units and sales were 9,000 units what was the profit made
under absorption costing?

4.10 What would the profit be on 11,000 production and 9,000 sales using marginal
costing?

☑ **Concepts and definitions solutions**

4.1   Absorption costing

$$\text{Absorption rate} = \frac{\text{Budgeted overhead}}{\text{Budgeted volume}}$$

$$= \frac{\text{£60,000}}{\text{12,000 machine hours}}$$

$$= \text{£5 per machine hour}$$

	£
Overhead incurred	5,500
Overhead absorbed (1,100 hours × £5)	5,500

Since both figures tally, there is neither under nor over absorption.

If overhead incurred had been higher than overhead absorbed there would have been under absorption.

If overhead absorbed was the higher figure, there would have been over absorption.

4.2   Absorption and marginal costing

Absorption costing is a method of costing that, in addition to direct costs, assigns all, or a proportion of, production overhead costs to cost units by means of one or a number of overhead absorption rates.

Marginal costing is the accounting system in which variable costs are charged to cost units and fixed costs of the period are written off in full against the aggregate contribution.

4.3   Marginal and absorption costing

(i)   Marginal costing

	£
Sales (4,750 × 12)	57,000
Variable cost of sales (4,750 × 7)	(33,250)
Contribution	23,750
Fixed costs	(10,000)
Operating profit	13,750

(ii)   Absorption costing

	£
Sales (4,750 × 12)	57,000
Cost of sales (4,750 × 9)	42,750
Operating profit	14,250
Under absorbed overhead	(500)
	13,750

Workings
W1:
Unit cost

	£
Direct materials	3
Direct wages	2
Variable overhead	2
Fixed overhead absorbed	2
	(9)

$$\text{Fixed overhead} = \frac{£10,000}{5,000} = £2$$

W2:
Under absorption

	£
Fixed overhead incurred	10,000
Fixed overhead absorbed (4,750 × £2)	9,500
Stock valuation	500

4.4 (i)   Absorption costing higher
     (ii) Marginal costing higher
     (iii) Same value

4.5 Contribution is sales value less variable cost of sales, so in previous example 4.3

	£
Selling price	12
Direct materials	3
Direct wages	2
Variable overhead	2
Contribution is	5

It is used with marginal costing.

4.6 Advantages of marginal costing

(i)   Profit per unit is a misleading figure. In Question 4.3 the operating margin of £3 per unit arises because fixed overhead per unit is based on 5,000 units.
(ii) Building up or running down stocks can create artificially high or low profit figures.
(iii) Comparisons between products are unhelpful because of the arbritrary apportionment of fixed costs.

4.7 Advantages of absorption costing

(i)   It is necessary to include fixed overhead in stock valuation in financial accounting.
(ii) For job costing, it is the only practical way to estimate prices and profits.
(iii) Analysis of under/over absorbed overhead can identify which areas of production resources are being utilised fully.

4.8 It shows that fixed overheads have been absorbed into production units at a rate of £35 per unit using absorption costing.

4.9   Profit under absorption costing

	£	£
Sales (9,000 × 20)		180,000
Production (11,000 × 12)	132,000	
Less Closing stock (2,000 × 12)	24,000	108,000
Operating Margin		72,000
Over absorption of fixed overhead		
(1,000 × 4)		4,000
Less		76000
Fixed selling cost (10,000 × 2)	20,000	
Variable selling cost (9,000 × 1)	9,000	29,000
		47,000

4.10   Profit under marginal costing

	£	£
Sales (9,000 × 20)		180,000
Production (11,000 × 8)	88,000	
Less Closing stock (2,000 × 8)	16,000	72,000
		108,000
Variable selling cost (9,000 × 1)		9,000
Contribution		99,000
Less		
Fixed production overhead (10,000 × 4)	40,000	
Fixed selling cost (10,000 × 2)	20,000	60,000
		39,000

❓ Multiple choice questions

Questions 4.1–4.8 are based on the following information:

Production data for 1 sinatra
Materials	2.4 kg and £3 per kg
Direct labour	1.5 hours at £5 per hour
Variable overhead rate	£4 per direct labour hour
Fixed overhead absorption rate	£7 per direct labour hour
Budgeted production	5,000 sinatras

4.1 The budgeted fixed overhead for the period was

    A £50,000
    B £52,500
    C £55,000
    D £57,500

4.2 The marginal cost of a sinatra is

    A £7.50
    B £14.70
    C £20.70
    D £31.20

4.3 The total absorption cost of a sinatra is

    A £7.50
    B £14.70
    C £20.70
    D £31.20

4.4 If budgeted sales are 4,300 sinatras at £40 each, the budgeted profit using marginal cost is

    A £52,500
    B £30,490
    C £20,200
    D £10,150

4.5 If budgeted sales are 4,300 sinatras at £40 each, what is the budgeted profit using absorption costing?

    A £52,500
    B £39,460
    C £37,840
    D £30,490

4.6 The difference between the two profit levels in Questions 4.4 and 4.5 can be attributed to

    A Budgeted sales less than budgeted production
    B Marginal cost being less than absorption cost per unit
    C Fixed overhead absorption rate higher than variable overhead rate
    D The difference in the value of closing stock

4.7   Marginal costing is more appropriate for short-run decision-making than absorption costing because:

A   Marginal costing reflects the behaviour of costs in relation to activity
B   Marginal costing needs to be used in financial statements
C   Once fixed costs have been incurred, they are sunk costs
D   Marginal costing reflects a more accurate closing stock figure

4.8   Which of the following is not a defence of absorption costing?

A   It is necessary to include fixed overhead in stock values for financial statements
B   For small jobbing business, overhead allotment is the only practical way of obtaining job costs for estimating
C   Analysis of under/over absorbed overhead is a useful way to identify inefficient utilization of production resources
D   Ensuring higher closing stock will increase profit figures

4.9   Overabsorbed 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

4.10   Which of the following best describes contribution?

A   Sales value less variable cost of sales
B   Absorption cost + marginal cost
C   Variable cost + sales value
D   None of the above

✅ Multiple choice solutions

4.1 B

Budgeted fixed overhead
= No. of units × no. of labour hours × labour hourly rate
= 5,000 × 1.5 × £7
= £52,500

4.2 C

Marginal cost

	£
Materials (2.4 × £3)	7.20
Direct labour (1.5 × £5)	7.50
Variable overhead (1.5 × £4)	6.00
	20.70

4.3 D

Absorption cost

	£
Marginal cost	20.70
Fixed overhead (1.5 × £7)	10.50
	31.20

4.4 B

Budgeted profit

	£
Sales	172,000
Less: Cost of sales (4,300 × £20.70)	89,010
Total contribution (4,300 × £19.30)	82,990
Less: Fixed overhead	52,500
Profit	30,490

4.5 C

Total absorption costing

	£
Sales	172,000
Less: Cost of sales (4,300 × £31.20)	134,160
Profit	37,840

4.6 D

Difference in profit = 7,350
Difference in closing stock (700 × £10.50) = 7,350

4.7 A

Marginal costing is more appropriate for short-run decision-making than absorption costing because marginal costing reflects the behaviour of costs in relation to activity.

4.8   **D**

Ensuring higher closing stock to increase profit figures is not a defence of absorption costing. Such a policy is an example of accounting malpractice.

4.9   **A**

Overabsorbed overheads occur when absorbed overheads exceed actual overheads.

4.10   **A**

Contribution is sales value less variable cost of sales.

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Cost–Volume–Profit Analysis

5

? Concepts and definitions questions

5.1 What is cost-volume-profit (CVP) analysis?

5.2 Break-even analysis

Consider the following data:

Selling price   £10 per unit
Variable cost   £6 per unit
Fixed costs   £1,000

How many units need to be sold to break-even?

5.3 Profit targets

Using the same data as in Question 5.2, if fixed costs rise by 20% and the company need to make a profit of £350, how many units need to be sold?

5.4 Margin of safety

If budgeted production and sales are 80,000 units and selling price is £10, variable cost is £5 per unit and fixed costs are £200,000, calculate the margin of safety.

5.5 A product has an operating statement for the sales of 1,000 units.

	£
Sales	10,000
Variable costs	6,000
Fixed costs	2,500

You are required to calculate:

  (i)   Profitability to sales
 (ii)   Contribution to sales
(iii)   Break-even sales in
        (1) value
        (2) units
 (iv)   Margin of safety

5.6   State four assumptions of CVP analysis.

   (i)
   (ii)
  (iii)
  (iv)

5.7   What is the difference between a break-even chart and a profit-volume chart?

5.8   Why does an economist's break even chart differ to that of an accountant?

5.9   What is a limiting factor?

5.10   How do you calculate the contribution required to cover target profit?

☑️ Concepts and definitions solutions

5.1   Cost-volume-profit (CVP) analysis is a technique which uses cost behaviour theory to identify the activity level at which there is neither a profit nor a loss (i.e. break-even).

5.2   Break-even volume target

$$\text{Break-even volume target} = \frac{\text{Fixed costs}}{\text{Selling price} - \text{variable cost per unit}}$$

$$= \frac{£1,000}{£10 - 6} = 250 \text{ units}$$

5.3   Profit targets

Using the same data as in Question 6.2, if fixed costs rise by 20% and a profit of £350 needs to be made then we need to work out a volume target.

$$\text{Volume target} = \frac{\text{Contribution target}}{\text{Unit contribution}}$$

$$= \frac{£1,000 + £200 + £350}{£4} = 387.5$$

So rounding up 388 units.

5.4   Margin of safety

The margin of safety is the difference between budgeted sales volume and break-even sales volume.

$$\text{Break-even sales} = \frac{£200,000}{£10 - £5} = 40,000 \text{ units}$$

Budgeted sales = 80,000

So margin of safety = 40,000 or 50% of budgeted sales.

5.5   (i)   Profitability to sales $= \dfrac{£1,500}{£10,000} = 15\%$

(ii)   Contribution to sales $= \dfrac{£4,000}{£10,000} = 40\%$

(iii)   1   Break-even sales value $= \dfrac{£2,500}{40\%} = £6,250$

2   If selling price is £10 and break-even sales value is £6,250 then unit sales = 625

(iv)   Margin of safety $= \dfrac{£3,750}{£10,000}$ (£10,000 − 6,250)

$= 37.5\%$

If you multiply contribution to sales ratio with margin of safety, you end up with the same figure as the profitability to sales ratio.

5.6   Assumption of CVP analysis

    (i)   Assumes selling price is constant, regardless of the number of units sold.
  (ii)   Assumes fixed costs are constant.
 (iii)   Assumes variable cost is constant.
 (iv)   Assumes stocks are valued at variable cost.

5.7   Break-even chart vs profit-volume chart

A break-even chart plots total costs and total revenues at different levels of output.

A profit-volume chart shows the net profit or loss at any level of output.

5.8   For the accountant, both the total cost and sales revenue are shown as straight lines. For the economist, unit cost could rise or fall due to economies or diseconomies of scale and in order to sell more units, the economist would argue that price would need to fall.

5.9   A limiting factor is any factor which is in scarce supply and stops the organisation from expanding it's activities further.

In such a situation, it then seek to maximise the contribution per unit of the limiting factor.

5.10   Fixed cost plus target profit.

？ Multiple choice questions

Questions 5.1–5.4 are based on the following information:

A company manufactures a single product which has the following cost structure based on a production + sales budget of 10,000 units.

	£
Materials (4 kg at £3 per kg)	12
Direct labour hours (5 hours at £7 per hour)	35

Variable overheads are recovered at £8 per direct labour hour.

Other costs include

Factory fixed overheads	120,000
Selling and distribution overheads	160,000
Fixed administration overheads	80,000

The selling and distribution overheads include a variable element due to a distribution cost of £2 per unit. Selling price is £129.

5.1 How many units have to be sold for the class to break-even?

   A 8,500
   B 9,000
   C 9,500
   D 1,000

5.2 The level of revenue which would give a net profit of £40,000 is

   A £1 million
   B £1,225,500
   C £1,300,250
   D £1,325,000

5.3 The margin of safety is

   A 1,000 units
   B 1,250 units
   C 1,440 units
   D 1,500 units

5.4 If the company sells 9,500 units at £129 each and still incurred £197,500 of overheads, what would be the maximum buy in price?

   A £100
   B £102
   C £104
   D £108

5.5 If both the selling price and the variable cost per unit of a company rise by 20%, the break-even point will

   A Remain constant
   B Increase
   C Fall
   D Impossible to determine

5.6 Company KL Ltd operate a marginal costing system. For the forthcoming year, variable costs are budgeted to be 60% of sales value and fixed costs to be 10% of sales value. If the company increase their selling price by 10% and fixed costs, variable costs and sales volume remain the same, the effect on contribution would be

   A   A decrease of 5%
   B   No change
   C   An increase of 15%
   D   An increase of 25%

5.7 The selling price is £100, gross profit is 50%. Which one of the following statements is true?

   A   Mark up is 50%
   B   Mark up is 100%
   C   Mark up is 100%
   D   Mark up is impossible to determine without knowing unit cost.

5.8 Product X generates a contribution to sales ratio of 50%. Fixed costs directly attributable to product X are £100,000 per annum.

The sales revenue required to achieve an annual profit of £125,000 is

   A   £450,000
   B   £400,000
   C   £125,000
   D   £100,000

5.9 In order to draw a basic breakeven chart, which of the following information would you not require?

   A   Selling price
   B   Variable cost
   C   Fixed cost
   D   Margin of safety

5.10 A company makes a single product which it sells for £10 per unit. Fixed costs are £48,000 and contribution to sales is 40%. If sales were £140,000, what was the margin of safety in units?

   A   2,000
   B   3,000
   C   4,000
   D   5,000

✅ **Multiple choice solutions**

5.1 **A**

Total variable cost	£
Materials (4 kg at £3 per kg)	12
Direct labour hours (5 hours at £7 per hour)	35
Variable overheads (5 hours at £8 per hour)	40
Distribution	2
	89

	£
Selling price	129
Variable cost	89
Contribution per unit	40

Fixed costs	£
Fixed overheads	120,000
Selling and distribution	140,000
Administration	80,000
	340,000

$$= \frac{£340,000}{£40} = 8,500 \text{ units.}$$

5.2 **B**

	£
Total fixed costs	340,000
Profits required	40,000
Required contribution	380,000

$$= \frac{£380,000}{£40} = 9,500 \text{ units}$$

Revenue = 9,500 × £129 = £1,225,500.

5.3 **D**

	Units
Budgeted production and sales	10,000
Break-even sales	8,500
Margin of safety	1,500

5.4 **B**

	£
Unavoidable fixed cost	197,500
Profit required	40,000
Required contribution	237,500

$$\text{Contribution per unit} = \frac{£237,500}{9,500}$$
$$= £25$$

	£
Selling price	129
Contribution	(25)
Maximum variable cost	104
Variable selling cost	(2)
Maximum buy in price	102

5.5   C

Assuming selling price is above variable cost, contribution per unit will rise so fewer units need to be sold so break-even will fall.

5.6   D

Let us take a numerical example:

	Original	*Change*	*New*
Selling price	100	+10%	110
Variable cost	60	–	60
Contribution/unit	40	+10	50

Percentage increase in contribution per unit = 10/40
= 25% increase.

5.7   B

If gross profit is 50%, unit cost is 50% of the sales price. If unit cost is £50 and selling price is £100, then it has been marked up by a factor of 100%.

5.8   A

$$\frac{\text{Required contribution}}{\text{C/S ratio}}$$
$$= \frac{£100,000 + £125,000}{0.5} = £450,000$$

5.9   B

5.10   A

$$\text{Break-even point} = \frac{\text{Fixed costs}}{\text{Contribution/sales}}$$
$$= \frac{£48,000}{0.4} = £120,000$$

If actual sales = £140,000

Margin of safety = £140,000 − £120,000
                              = £20,000

If selling price = £10 then 2,000 units represents margin of safety.

Limiting Factor Analysis

6

? Concepts and definitions questions

6.1 What is a scarce resource?

6.2 A company makes two products which both use the same type and grade of materials and labour but in different quantities.

	Product A	Product B
Labour hours	5	8
Materials/unit	£20	£15

During each week there are 2,000 labour hours available and the value of material available is limited to £12,000.

Product A makes a contribution of £5 per unit and product B earns £6 contribution per unit.

Which product should they make?

6.3 A company makes three products X, Y and Z. All three products use the same type of labour which is limited to 1,000 hours per month. Individual details are as follows:

Product	X	Y	Z
Contribution/unit	£25	£40	£32
Labour hours/unit	5	6	8
Maximum demand	50	100	400

What quantities of each product should they produce?

6.4 A company makes three products using the same machine. The number of machine hours is limited to 1,880 hours. Individual product details are

Product	A	B	C
Contribution/unit	£15	£9	£12
Machine hours/unit	6	4	8
Maximum demand	300	150	200
Minimum demand	100	120	40

Advise company as to the quantity of each product to be produced in order to maximise profits.

6.5   What is a shadow price?

6.6   State three advantages and disadvantages for buying in of components over making them in-house.

6.7   How could a company find themselves with a minimum demand constraint?

Questions 6.8–6.10 are based on the following scenario:

A company manufactures three components which it uses in its finished product. The component workshop is currently unable to meet the demand for all components and is considering the possibility of sub-contracting.

	Component A £	*Component B* £	*Component C* £
Variable cost of production	3	4	6
Outside purchase price	2	6	12
Machine hours per unit	1	0.5	2
Labour hours per unit	2	3	4

6.8   Which components should be bought out if the company is operating at full capacity?

6.9   Which components should be bought out if production is limited to 4,000 machine hours per week?

6.10   Which components should be bought out if production is limited to 4,000 labour hours per week?

✅ Concepts and definitions solutions

6.1 A scarce resource is a good or service which is in short supply. In limiting factor analysis the scarce resource might be labour hours, machine hours or raw materials.

6.2 Multiple products

Labour hours (2,000/5) = 400 units of A
Labour hours (2,000/8) = 250 units of B
Materials (12,000/£20) = 600 units of A
Materials (12,000/£15) = 800 units of B

Limiting factor is labour.

So

Product A benefit per labour hour $= \dfrac{£5}{5} = £1$

Product B benefit per labour hour $= \dfrac{£6}{8} = 75p$

Company maximises its contribution by selling product A, since limiting factor value is higher.

6.3 Contribution per labour hour of X $= \dfrac{£25}{5} = £5$ (2nd)

Contribution per labour hour of Y $= \dfrac{£40}{6} = £6.67$ (1st)

Contribution per labour hour of Z $= \dfrac{£32}{8} = £4$ (3rd)

Quantities produced

	Hours
100 units of Y	600
50 units of X	250
18.75 units of Z	150 (balance)
	1,000

Since it would not be practical to produce 0.75 of a unit, we would produce 18 of good Z with 6 spare hours.

6.4 Minimum demand

Contribution per machine hour of product A

$\dfrac{£15}{6} = £2.50$ (1st)

Contribution per machine hour of product B

$\dfrac{£9}{4} = £2.25$ (2nd)

Contribution per machine hour of product C

$\dfrac{£12}{8} = £1.50$ (3rd)

Assuming we are obliged to meet minimum demand requirements

	Hours
Product A (100 × 6 hours)	600
Product B (120 × 4 hours)	480
Product C (40 × 8 hours)	320
	1,400
	480 (balance)
	1,880

Since product A is most profitable we would produce a further 80 units of product A (i.e. 480/6 = 80)

So Product A minimum demand +80
    Product B minimum demand only
    Product C minimum demand only.

6.5 A shadow price is an increase in value which would be created by having available one additional unit of a limiting resource at the original cost. It is used to calculate the maximum price that should be paid to obtain an additional unit of the resource. It is also used in transfer pricing in multinational organisations.

6.6 *Advantages*

  (i)   Reduces fixed costs, thereby lower breakeven figure.
  (ii) Improve cash flow.
  (iii) Specialist companies may be better at making components.

  Disadvantages

  (i)   A firm which changes from in-house may be faced with redundancy costs which will outweigh savings.
  (ii) Lose quality control.
  (iii) May affect customer relationships.

6.7 Minimum demand constraints

  A minimum demand constraint could arise if there is a contractual obligation to produce a minimum quantity for a particular client.

6.8 Applying limiting factor analysis to make or buy, Component A should be bought out regardless of any limiting factor since variable cost of production is higher than the outside purchase price.

6.9 If machine hours are limited to 4,000 hours

	Component B	*Component C*
Excess cost	2	6
Machine hours per unit	0.5	2
Excess cost per machine hour	£4	£3

Component C has the lowest excess cost per limiting factor so it should be bought out.

Check

	Component B	Component C
	£	£
Units produced in 4 hours	8,000	2,000
Production costs	32,000	14,000
Purchase costs	48,000	26,000
Excess cost of purchase	£16,000	£12,500

6.10 If labour hours are limited to 4,000 hours

	Component B	Component C
	£	£
Excess cost	2	6
Labour hours	3	4
Excess cost per labour hour	0.66	1.50

Therefore, component B has the lowest excess cost per limiting factor and should be bought out.

Check

	Component B	Component C
Units produced in 4,000 labour hours	1,333	1,000
	£	£
Production costs	5,332	6,000
Purchase costs	7,998	12,000
Excess cost of purchase	2,666	6,000

? Multiple choice questions

6.1 JB produces three products A, B and C which all require skilled labour. This is limited to 6,100 hours per month.

	A	B	C
Labour hours per unit	1	3	1.5
Contribution per unit	£30	£45	£30
Maximum sales	2,500 units	1,000 units	2,000 units

In order to maximise profits for the month, production quantities of each product should be

A   A 2,500   B 200   C 2,000
B   A 2,500   B 1,000   C 2,000
C   A 2,500   B 1,000   C 1,000
D   A 2,000   B 1,000   C 2,000

6.2 Based on the same information as in Question 6.1, but there was a contractual obligation to produce 500 units of product B, how should the products now be produced?

A   A 2,500   B 500   C 2,800
B   A 2,500   B 500   C 1,400
C   A 2,000   B 500   C 1,200
D   A 2,000   B 500   C 1,000

Questions 6.3 and 6.4 are based on the following data:

Company A makes three products using the same type of labour. Individual product details are as follows:

Product	X	Y	Z
Contribution/unit	£20	£18	£15
Labour hours/unit	5	3	3
Maximum demand	100	200	400
Minimum demand	50	50	100

Labour hours are limited to 1,300 hours.

6.3 The most profitable use of labour hours subject to their demand constraints are

A   X 50   Y 200   Z 150
B   X 50   Y 150   Z 200
C   X 100   Y 200   Z 400
D   X 50   Y 50   Z 100

6.4 The maximum premium they should pay in order to obtain extra labour hours to 750 hours is

A   £5
B   £4
C   £6
D   £10

6.5 Company blue makes a single product which requires £5 of materials, 2 hours of labour and 1 hour of machine time.

There is £500 available for materials each week, 80 hours of labour and 148 hours of machine time. The limiting factor is

A   Materials
B   Labour
C   Machine time
D   All of the above

6.6   If variable manufacturing cost = £5 per unit
Fixed costs   = £10,000 avoidable
Fixed costs   = £20,000 committed
Budgeted production   = 5,000 units

The maximum buy in price is equal to:

A   £5
B   £6
C   £7
D   £8

6.7   Which of the following could be a limiting factor?

 (i)   Machine hours
 (ii)   Labour hours
(iii)   Maximum demand
(iv)   Minimum demand

A   (i) and (ii)
B   (i), (ii) and (iii)
C   (i), (ii) and (iv)
D   (i), (ii), (iii) and (iv)

6.8   Which of the following is not a valid argument for buying in?

A   Reduction of fixed costs
B   Improvements in cash flow
C   Reduction in employment
D   Allow resources to be channelled into more profitable areas

6.9   A shadow price is

A   An increase in value which would be created by having available one additional unit of a limiting resource at the original cost.
B   A price which your competitor can match.
C   A price which you can match your competitor.
D   A price which the industry leader charges and is monitored by the rest of the industry.

6.10   A company makes three products as follows:

	A	B	C
	£	£	£
Material at £5 per kg	5	2.50	10
Labour at £2 per hour	6	2	2
Fixed costs absorbed	6	2	2
Profit	6	3.50	5
Selling price	23	10	19

Maximum demand is 1,000 each, materials are limited to 4,000 kg, labour is fixed at 1,000 hours. To maximise profits the company should produce

A   1,000 of A
B   1,000 of B
C   1,000 of C
D   333 of each

☑ **Multiple choice solutions**

6.1 **A**

Limiting factor labour hours

Contribution per limiting factor

	A	B	C
	£30	£15	£20
Rank	1	3	2

	Units	Hours
Product A	2,500	2,500
Product C	2,000	3,000
Product B	200	600
		6,100

6.2 **B**

	Units	Hours
Product B	500	1,500
Product A	2,500	2,500
Product C	1,400	2,100
		6,100

6.3 **A**

Limiting factor labour hours

Contribution per labour hour

$$X = \frac{£20}{5} = 4 \quad \text{(3rd)}$$

$$Y = \frac{£18}{3} = 6 \quad \text{(1st)}$$

$$Z = \frac{£15}{3} = 5 \quad \text{(2nd)}$$

Number of labour hours for minimum demand is

	Hours
X (50 × 5)	250
Y (50 × 3)	150
Z (100 × 3)	300
	700

balance 600 hours; this enables another 150 ($\times$ 3 = 450) units of Y to be produced and $600 - 450 = 150 \div 3 = 50$ units of Z

So   Product X 50 units (min. demand)
     Product Y 200 units (max. demand)
     Product Z 150 units (min. + 50).

6.4 **A**

Contribution per labour hour for product Z is £5 so this is the shadow price until Z is at a maximum which is 250 units. So the maximum premium paid should be £5.

6.5 **B**

Resources available

Materials   = £500
Labour hours   = 80
Machine hours = 148

Units we could make from materials   100
Labour   40
Machine time   148

Therefore, limiting factor is labour.

6.6 **C**

Total avoidable cost   = £10,000 + 5,000 × 5
                                       = £35,000
Number of units required = 5,000

So maximum buy in price $= \dfrac{£35,000}{5,000}$

                                                 $= £7$

6.7 **D**

Machine hours, labour hours, maximum demand and minimum demand could all be limiting factors.

6.8 **C**

A reduction in employment is likely to lead to a loss of motivation and morale amongst the staff.

6.9 **A**

A shadow price is an increase in value which would be created by having available one additional unit of a limiting resource at the original cost.

6.10 **C**

To make 1,000 units of each requires 3,500 kg of material and 5,000 labour hours. Labour is therefore the limiting factor.

To measure contribution we need to add fixed costs absorbed to the profit, so

$A = \dfrac{£12}{3} = £4$

$B = \dfrac{£5.50}{1} = £5.50$

$C = \dfrac{£7}{1} = £7$

Therefore to maximise profits, the firm should produce 1,000 units of C.

Standard Costs

7

? Concepts and definitions questions

7.1   What is standard costing?

7.2   What is a standard cost?

7.3   Distinguish between four types of standard.

   (i)
  (ii)
 (iii)
 (iv)

7.4   Write down the four general headings for a standard cost.

   (i)
  (ii)
 (iii)
 (iv)

7.5   What is a standard hour?

7.6   A factory had an activity level of 110% with the following output.

	Units	Standard minutes each
Product A	5,000	5
Product B	2,500	10
Product C	3,000	15

The budgeted direct labour cost was £5,000

Calculate:

 (i)   The budgeted standard hours
(ii)   Budgeted labour cost per standard hour

7.7   Annie's cafe makes sandwiches for sale. Contents of their cheese and pickle sandwich are as follows:

2 slices of bread
50 grams of cheese
25 grams of pickle
5 grams of butter

Losses due to accidental damage are estimated to be 5% of the completed sandwich.

Materials can be bought from the cash and carry at the following prices:

Bread 50p per loaf of 20 slices
Cheese £3 per kg
Pickle £2 per kg
Butter £1.50 per kg
Prepare the standard cost of one cheese and pickle sandwich.

7.8 Give five possible sources of information from which a standard materials price may be estimated.

(i)
(ii)
(iii)
(iv)
(v)

7.9 If raw materials consist of
5 kg A at £2 per kg
3 kg B at £3 per kg

If labour consists of
4 hours grade X at £5 per hour
5 hours grade Y at £10 per hour

If variable overheads are
9 hours at £20 per hour

And fixed overheads are
9 hours at £25 per hour

Prepare a standard cost card using

(i) Marginal costing
(ii) Absorption costing

7.10 In setting standards, three things should be kept in mind. They are

(i)
(ii)
(iii)

☑ Concepts and definitions solutions

7.1 Standard costing is a control technique which compares standard costs and revenues with actual results to obtain variances which are used to improve performance.

7.2 A standard cost is the planned unit cost of the products, components or services produced in a period.

7.3 Types of standard

(i) A *basic standard* is a standard established for use over a long period from which a current standard can be developed.
(ii) An *ideal standard* is one which can be attained under the most favourable conditions, with no allowance for normal losses, waste or idle time.
(iii) An *attainable standard* is one which can be attained if a standard unit of work is carried out efficiently. Allowances are made for normal losses.
(iv) A *historic standard* is a standard based on last periods actuals or the average of some previous periods.

7.4 Preparations of standard costs

In general, a standard cost will be subdivided into four key sections or headings. They are

(i) Direct materials
(ii) Direct wages
(iii) Variable overhead
(iv) Fixed overhead.

7.5 A standard hour is the amount of work achievable, at standard efficiency levels in an hour.

7.6 (i) Budgeted labour costs and standard hours

Actual standard hours produced

$$\text{Product A} \left(5{,}000 \times \frac{5}{60} \right) \qquad 416.67$$

$$\text{Product B} \left(2{,}500 \times \frac{10}{60} \right) \qquad 416.67$$

$$\text{Product C} \left(3{,}000 \times \frac{15}{60} \right) \qquad \underline{750.00}$$

$$\underline{1{,}583.34}$$

Representing 110% of budgeted standard hours

$$= 1{,}583.34 \times \frac{100}{110}$$

$$= 1{,}439 \text{ budgeted standard hours}$$

    (ii)   Budgeted labour cost per standard hour

$$= \frac{\text{Budgeted cost}}{\text{Budgeted standard hour}}$$

$$= \frac{£5,000}{1,439}$$

        = £3.47 per hour

7.7   Standard cost for cheese and pickle sandwich

	£
2 slices of bread (2 × 2.5p)	0.05
50 grams cheese (5% × £3)	0.15
25 grams pickle (2$\frac{1}{2}$% × £2)	0.05
5 grams butter (0.05 × £1.50)	0.0075
Cost per sandwich started 95%	0.2575p
Standard material cost	0.2710p

7.8   Sources of information

Standard materials price may be estimated from:

  (i)   Quotes/estimates from suppliers
 (ii)   Industry trends
(iii)   Bulk discounts available
(iv)   Quality of material
 (v)   Packaging and carriage inwards charges.

7.9   (i)   Marginal costing

	£
5 kgs A at £2	10
3 kgs B at £3	9
4 hours grade X at £5	20
5 hours grade Y at £10	50
Variable overhead (9 × £20)	180
	269

  (ii)   Absorption costing

	£
As above	269
Fixed overhead (9 × £25)	225
	494

7.10   Standards

In setting standards, three things should be remembered.

  (i)   Their use for control purposes
 (ii)   Their impact on motivation
(iii)   Their relevance to the planning process.

⁇ **Multiple choice questions**

7.1 Standards which can be attained under the most favourable conditions, with no allowance for idle time or losses are known as:

A Basic
B Ideal
C Attainable
D Historic

7.2 A standard established for use over a long period of time from which a current standard can be developed is a:

A Basic
B Ideal
C Attainable
D Historic

Questions 7.3 and 7.4 are based on the following information:

In a given week, a factory has an activity level of 120% with the following output:

	Units	*Standard minutes each*
Product A	5,100	6
Product B	2,520	10
Product C	3,150	12

The budgeted direct labour cost for budgeted output was £2,080.

7.3 Budgeted standard hours were

A 1,560
B 1,872
C 1,248
D 1,300

7.4 Budgeted labour cost per standard hour was

A £1.83
B £1.11
C £1.67
D £1.60

7.5 A standard hour is

A Always equivalent to a clock hour
B An hour with no idle time
C The quantity of work achievable at standard performance in an hour
D An hour through which the same products are made

7.6 Which of the following statements is incorrect?

A Both budgets and standards relate to the future
B Both budgets and standards must be quantified
C Both budgets and standards are used in planning
D Both budgets and standards are expressed in unit costs

7.7 A standard cost will be set for each product comprising

  (i) Direct materials
 (ii) Direct wages
(iii) Variable overhead
(iv) Fixed overhead

A (i), (ii) and (iii)
B (i), (ii) and (iv)
C (ii), (iii) and (iv)
D (i), (ii), (iii) and (iv)

7.8 Which of the following statements is incorrect?

A Under standard costing, all stocks are valued at their standard costs
B Standard costs are incorporated in the ledger accounts
C Standard costs are set as unit costs
D Standard costs are the same as marginal costs

7.9 Where fixed production overheads are absorbed into cost units and the production process is labour intensive, what would be the most appropriate absorption basis?

A Labour wage
B Labour hours
C Number of workers
D None of the above

7.10 Which type of standard would be most suitable for controlling a business?

A Basic
B Ideal
C Attainable
D Historic

☑ Multiple choice solutions

7.1 **B**

Standards which can be attained under the most favourable conditions, with no allowance for idle time or losses are known as ideal standards.

7.2 **A**

A standard established for use over a long period of time from which a current standard can be developed is a basic standard.

7.3 **D**

Actual standard hours produced

<table>
<tr><td></td><td align="center">*Hours*</td></tr>
<tr><td>Product A $\left(5,100 \times \dfrac{6}{60}\right)$</td><td align="center">510</td></tr>
<tr><td>Product B $\left(2,520 \times \dfrac{10}{60}\right)$</td><td align="center">420</td></tr>
<tr><td>Product C $\left(3,150 \times \dfrac{12}{60}\right)$</td><td align="center">630</td></tr>
<tr><td></td><td align="center">1,560</td></tr>
</table>

Budget standard $= 1,560 \times \dfrac{100}{120} = 1,300$

7.4 **D**

Budgeted labour cost per standard hour

$$= \frac{\text{Budgeted cost}}{\text{Budgeted standard hour}}$$

$$= \frac{2,080}{1,300} = \text{£}1.60$$

7.5 **C**

A standard hour is the quantity of work achievable at standard performance in an hour.

7.6 **D**

Standards are expressed in units costs, budgets are expressed in aggregate terms.

7.7 **D**

A standard cost will be set for each product comprising direct materials, direct wages, variable overhead and fixed overhead.

7.8 **D**

Statements A, B and C are all correct. Standard cost is not the same as marginal cost. Marginal cost is the cost of producing one more unit.

7.9   **B**

When fixed production overheads are absorbed into cost units and the production process is labour intensive, the most appropriate absorption basis would be labour hours.

7.10   **C**

The type of standard which would be most suitable for controlling a business would be attainable.

Variance Analysis

8

❓ Concepts and definitions questions

8.1   What is a cost variance?

8.2   What would an adverse materials price variance and a favourable materials usage variance indicate and what might it be caused by?

8.3   What does an adverse variable overhead total variance indicate and what might be the causes?

8.4   What is the relationship between the labour efficiency variance and the variable overhead efficiency variance? Why might the numerical value be different?

8.5   Distinguish between the following:

     (i)   An ideal standard
    (ii)   An attainable standard
   (iii)   Current standard

8.6   Write down 5 elements in a unit's standard cost.

8.7   State three criticisms of standard costing.

The following questions are based on:

You are the management accountant of T plc. The following computer printout shows details relating to April 2005:

	Actual	*Budget*
Sales volume (units)	4,900	5,000
Selling price per unit (£)	11.00	10.00
Production volume (units)	5,400	5,000
Direct materials		
Weight (kg)	10,600	10,000
Price per kg (£)	0.60	0.50
Direct labour		
hours per unit	0.55	0.50
rate per hour (£)	3.80	4.00

Fixed overhead
Production (£)	10,300	10,000
Administration (£)	3,100	3,000

T plc uses a standard absorption costing system.

There was no opening or closing work-in-progress (WIP).

8.8 Calculate:

    (i) The sales price variance
    (ii) The sales volume variance
    (iii) Material price variance
    (iv) Material usage variance
    (v) Labour rate
    (vi) Labour efficiency

8.9 Explain briefly the possible causes of

    (i) The material usage variance;
    (ii) The labour rate variance;
    (iii) The sales volume profit variance.

8.10 Explain the meaning and relevance of interdependence of variances when reporting to managers.

☑ **Concepts and definitions solutions**

8.1 A cost variance is a difference between a planned, budgeted or standard cost and the actual cost incurred.

8.2 Materials variances

An adverse price variance and a favourable materials usage variance indicates that there is an inverse relationship between the two. It might be caused by purchasing higher quality material.

8.3 Variable overhead

It indicates that the work completed took longer than it should have done. It could be caused by employing semi-skilled workers instead of skilled workers who will take longer to complete the job.

8.4 Labour/overhead efficiency rate

The labour efficiency and the variable overhead efficiency will total the same number of hours. Their numerical value is likely to be different if their hourly rates are different.

8.5 **Answer**

   (i)   An ideal standard is one which is achievable only under most favourable conditions
   (ii) Attainable standards are set at attainable levels but include allowances for loss, waste, downtime, etc.
   (iii) Current standards are based on current performance levels

8.6 **Answer**

   (i)   Material price
   (ii) Material usage
   (iii) Labour rate
   (iv) Labour time
   (iv) Variable production overhead costs

8.7 **Answer**

   (i)   Standard costing was developed when the business environment was more stable
   (ii) Performance to standard used to be deemed to be satisfactory but today firms are seeking constant improvement
   (iii) Emphasis on labour variances no longer appropriate with increasing use of automated production techniques

8.8   Actual profit

   (i)   The material usage variance, being favourable, indicates that the amount of material used was less than expected for the actual output achieved. This could be caused by the purchase of higher quality materials, which resulted in less wastage than normal.

  (ii)   The labour rate variance, being favourable, indicates that the hourly wage rate paid was lower than expected. This could be due to employing a lower grade employee than was anticipated in the budget.

  (iii) The sales volume profit variance, being adverse, indicates that the number of units sold was less than budgeted. This may have been caused by the increased sales price of £11 (compared to a budgeted price of £10) which has reduced customer demand, or the actions of competitors.

8.9   Interdependence of variances is the term used to describe the situation when there is a single cause of a number of variances.

         For example, the use of a higher grade of labour than was anticipated is likely to cause an adverse labour rate variance, a favourable labour efficiency variance, and possibly a favourable material usage variance (due to more experience of working with materials).

         It is important that when variances are reported, the possibility that some of them may have a common cause should be acknowledged, and managers encouraged to work together for the benefit of the organisation.

⟨?⟩ **Multiple choice questions**

The following ten questions are based on budgeted and actual figures for XYZ Ltd in the financial year 2005/2006.

Budget

Sales	50,000 units at £100
Production	55,000 units
Materials	110,000 kg at £20 per kg
Labour	82,500 hours at £2 per hour
Variable overhead	82,500 hours at £6 per hour
Fixed overhead	82,500 hours at £10 per hour
Standard cost of production	£67
Budgeted profit	£1,650,000

Actual

Sales	53,000 units at £95
Production	56,000 units
Materials purchased	130,000 kg
Closing stock	20,000 kg
Materials purchase price	£2,700,000
Labour	85,000 hours paid at £180,000
Labour	83,000 hours worked
Variable overhead	£502,000
Fixed overhead	£935,000
Actual profit	£1,319,000

8.1   The sales price variance was

   A   £265,000 (A)
   B   £265,000 (F)
   C   £99,000 (A)
   D   £99,000 (F)

8.2   The sales volume variance was

   A   £99,000 (F)
   B   £99,000 (A)
   C   £144,000 (F)
   D   £144,000 (A)

8.3   The materials usage variance was

   A   £20,000 (A)
   B   £20,000 (F)
   C   £40,000 (A)
   D   £40,000 (F)

8.4   Idle time was

   A   £2,000 (F)
   B   £2,000 (A)
   C   £4,000 (F)
   D   £4,000 (A)

8.5   The labour efficiency variance was

    A   £4,000 (F)
    B   £4,000 (A)
    C   £2,000 (F)
    D   £2,000 (A)

8.6   The variable overhead expenditure variance was

    A   £2,000 (F)
    B   £2,000 (A)
    C   £4,000 (F)
    D   £4,000 (A)

8.7   The variable overhead efficiency variance was

    A   £6,000 (A)
    B   £6,000 (F)
    C   £4,000 (A)
    D   £4,000 (F)

8.8   If we used marginal costing instead of absorption costing, actual profit would be

    A   £15,000 over
    B   £15,000 under
    C   £45,000 over
    D   £45,000 under

8.9   If stocks are valued at standardard cost, then material price variance should be based on:

    A   Purchase price
    B   Sales price
    C   Replacement price
    D   None of the above

8.10   If actual selling price is below standard selling price, contribution per unit will:

    A   Fall
    B   Rise
    C   Stay the same
    D   Be impossible to determine

☑ **Multiple choice solutions**

8.1   **B**

Sale price variance
53,000 × £5 = £265,000 (A)
Actual price below budget.

8.2   **C**

Sales volume
3,000 × £48 = £144,000

8.3   **D**

Materials usage variance

Standard usage (56,000 × 2)	112,000
Actual usage	110,000

Used 2,000 kg less than expected at £20 per kg so £40,000 (F).

8.4   **D**

Idle time variance is difference between hours paid and hours worked × hourly rate. It is always negative or adverse.

Actual hours paid	85,000
Actual hours worked	83,000
Idle time 2,000 × £2	
So £4,000 (A).	

8.5   **C**

Labour efficiency is the difference between standard time allowed and actual hours.

Standard time (56,000 × 1.5 hours)	84,000 hours
Actual time	83,000 hours
Labour efficiency rate (1,000 × £2)	£2,000 (F)

8.6   **D**

Variable overhead expenditure

Standard rate × actual hours (£6 × 83,000) =	498,000
Actual variable overhead expenditure =	592,000
Variable overhead 4,000 (A)	

8.7   **B**

Variable overhead efficiency rate

Same hours as labour Question 12.5
1,000 × £6 = £6,000 (F)

8.8   **D**

Stock valuation

Value of closing stock TAC 3,000 × £67
Value of closing stock MC 3,000 × £52

Under absorption 3,000 × £15 = £45,000

8.9   **A**

8.10   **A**

Cost Book-keeping

9

? Concepts and definitions questions

9.1   What are integrated accounts?

9.2   State six accounts in a manufacturing business which will contain control accounts.

     (i)
    (ii)
   (iii)
   (iv)
    (v)
   (vi)

9.3   State five appropriations of profit not dealt with in the costing system.

     (i)
    (ii)
   (iii)
   (iv)
    (v)

9.4   State five items where financial and costing treatments differ.

     (i)
    (ii)
   (iii)
   (iv)
    (v)

Questions 9.5–9.7 are based on the following information:

NB Ltd operates an integrated accounting system. At the beginning of October, the following balances appeared in the trial balance:

	£'000	£'000	£'000
Freehold buildings		800	
Plant and equipment, at cost		480	
Provision for depreciation on plant and equipment			100
Stocks:			
Raw materials		400	
Work-in-process 1:			
Direct materials	71		
Direct wages	50		
Production overhead	125	246	
Work-in-process 2:			
Direct materials	127		
Direct wages	70		
Production overhead	105	302	
Finished goods		60	
Debtors		1,120	
Capital			2,200
Profit retained			220
Creditors			300
Bank			464
Sales			1,200
Cost of sales		888	
Abnormal loss		9	
Production overhead under/over absorbed			21
Administration overhead		120	
Selling and distribution overhead		80	
		4,505	4,505

The transactions during the month of October were

	£'000
Raw materials purchased on credit	210
Raw materials returned to suppliers	10
Raw materials issued to	
Process 1	136
Process 2	44
Direct wages incurred	
Process 1	84
Process 2	130
Direct wages paid	200
Production salaries paid	170
Production expenses paid	250
Received from debtors	1,140
Paid to creditors	330
Administration overhead paid	108
Selling and distribution overhead paid	84
Sales on credit	1,100
Cost of goods sold	844

	Direct materials £'000	Direct wages £'000
Abnormal loss		
Process 1	6	4
Process 2	18	6
Transfer from process 1 to process 2	154	94
Transfer from process 2 to finished goods	558	140

Plant and equipment is depreciated at the rate of 20% per annum, using the straight-line basis. Production overhead is absorbed on the basis of direct wages cost.

9.5   What are the production overhead absorption rates for process 1 and for process 2?

9.6   Write up the ledger accounts.

9.7   Explain the nature of the abnormal losses and two possible reasons for their occurrence.

9.8   The profit shown in the financial accounts was £158,500 but the cost accounts show a different figure. The following stock valuations were used.

Stock valuations	Cost accounts £	Financial accounts £
Opening stock	35,260	41,735
Closing stock	68,490	57,336

What was the profit recorded in the cost accounts?

9.9   A firm operates an integrated cost and financial accounting system. If an issue of direct materials to production was requisitioned what would the accounting entries be?

☑ Concepts and definitions solutions

9.1   Integrated accounts are a set of accounting records which provide both financial and cost accounts using a common input of data for all accounting purposes.

9.2   Control accounts

(i)   Stores
(ii)   WIP
(iii) Stock
(iv)   Production overhead
(v)   Administration costs
(vi)   Marketing costs.

9.3   Appropriations of profit not dealt with in the costing system

(i)   Corporation tax
(ii)   Transfers to reserves
(iii) Dividends paid and proposed
(iv)   Goodwill
(v)   Charitable donations.

9.4   Items where financial and costing treatments differ

(i)   Valuation of stock and WIP
(ii)   Depreciation
(iii) Abnormal losses
(iv)   Interest on capital
(v)   Charge in lieu of rent.

9.5   Process 1

$$\text{Overhead absorbed rate (OAR)} = \frac{\text{Budgeted overheads}}{\text{Budgeted level of activity}}$$

$$= \frac{£125,000}{£50,000} = 250\% \text{ of direct labour cost}$$

(from work-in-process figures)

9.6   Process 2

$$\text{OAR} = \frac{£105,000}{£70,000} = 150\% \text{ of direct labour cost}$$

Freehold buildings at cost

	£'000		£'000
Bal b/f	800		

Plant and equipment

	£'000		£'000
Bal b/f	480		

Provision for depreciation on plant and equipment

	£'000		£'000
Bal c/f	108		100
		Production overhead control (W1)	8
	108		108
		Bal b/f	108

Raw materials

	£'000		£'000
Bal b/f	400	Creditors	10
Creditors	210	Work-in-process 1	136
		Work-in-process 2	44
		Bal c/f	420
	610		610
Bal b/f	420		

Work-in-process 1

	£'000		£'000
Bal b/f	246	Abnormal loss (W3)	20
Raw materials	136	Work-in-process 2 (W2)	483
Wages	84	Bal c/f	173
Production overhead control (W4)	210		
	676		676
Bal b/f	173		

Work-in-process 2

	£'000		£'000
Bal b/f	302	Abnormal loss (W6)	33
Raw materials	44	Finished goods (W7)	908
Wages	130	Bal c/f	213
Work-in-process 1 (W2)	483		
Production overhead control (W5)	195		
	1,154		1,154
Bal b/f	213		

Finished goods

	£'000		£'000
Bal b/f	60	Cost of sales	844
Work-in-process 2 (W7)	908	Bal c/f	124
	968		968
Bal b/f	124		

Debtors

	£'000		£'000
Bal b/f	1,120	Bank	1,140
Sales	1,100	Bal c/f	1,080
	2,220		2,220
Bal b/f	1,080		

Capital

	£'000		£'000
		Bal b/f	2,200

Profit retained

	£'000		£'000
		Bal b/f	220

Creditors

	£'000		£'000
Raw materials	10	Bal b/f	300
Bank	330	Raw materials	210
Bal c/f	170		
	510		510
		Bal b/f	170

Bank

	£'000		£'000
Debtors	1,140	Bal b/f	464
Bal c/f	466	Wages	200
		Production overhead control	170
		Production overhead control	250
		Creditors	330
		Administration overhead	108
		Selling and distribution overhead	84
	1,606		1,606
		Bal b/f	466

Sales

	£'000		£'000
Bal c/f	2,300	Bal b/f	1,200
		Debtors	1,100
	2,300		2,300
		Bal b/f	2,300

Cost of sales

	£'000		£'000
Bal b/f	888	Bal c/f	1,732
Finished goods	844		
	1,732		1,732
Bal b/f	1,732		

Abnormal loss

	£'000		£'000
Bal b/f	9	Bal c/f	62
Work-in-process 1 (W3)	20		
Work-in-process (W6)	33		
	62		62
Bal b/f	62		

Production overhead under/over absorbed

	£'000		£'000
Production overhead control	23	Bal b/f	21
		Bal c/f	2
	23		23
Bal b/f	2		

Administration overhead

	£'000		£'000
Bal b/f	120	Bal c/f	228
Bank	108		
	228		228
Bal b/f	228		

Selling and distribution overhead

	£'000		£'000
Bal b/f	80	Bal c/f	164
Bank	84		
	164		164
Bal b/f	164		

Wages

	£'000		£'000
Bank	200	Work-in-process 1	84
Bal c/f	14	Work-in-process 2	130
	214		214
		Bal b/f	14

Production overhead control

	£'000		£'000
Bank	170	Work-in-process 1 (W4)	210
Bank	250	Work-in-process 2 (W5)	195
Depreciation (W1)	8	Under absorption	23
	428		428

9.7 An abnormal loss is a loss greater than that expected under efficient working conditions. It indicates inefficiency. Possible reasons:

 (i) The materials were processed at too high or too low a pressure or temperature.

 (ii) A machine breakdown caused an unusual amount of defective output.

9.8

	£
Profit per financial accounts	158,500
Add: Difference between opening stocks	6,475
Add: Difference between closing stock value	11,154
Profit per cost accounts	176,129

9.9 The accounting entries for an issue of direct materials to production would be

Debit WIP since this increases the asset, and credit stores control since this decreases the asset materials stock.

⟨?⟩ **Multiple choice questions**

9.1   The profit shown in the financial accounts was £158,500 but the cost accounts showed a different figure. The following stock valuations were used:

Stock valuations	Cost accounts	Financial accounts
Opening stock	£34,260	32,140
Closing stock	£68,240	£70,192

What was the profit in the cost accounts?

A   £162,572
B   £154,628
C   £162,620
D   £162,402

9.2   A firm operates an integrated cost and financial accounting system. The accounting entries for an issue of direct materials to production would be

A   DR WIP control account
CR stores control account
B   DR finished goods account
CR stores control account
C   DR stores control account
CR WIP control account
D   DR cost of sales account
CR WIP control account

9.3   In an integrated cost and financial accounting system, the accounting entries for factory overhead absorbed would be:

A   DR WIP control account
CR overhead control account
B   DR overhead control account
CR WIP account
C   DR overhead control account
CR cost of sales account
D   DR cost of sales account
CR overhead control accounts

9.4   The book-keeping entries in a standard cost system when the actual price for raw materials is less than the standard price are

A   DR raw materials control account
CR raw materials price variance account
B   DR WIP control account
CR raw materials control account
C   DR raw materials price variance account
CR raw materials control account
D   DR WIP control account
CR raw materials price variance account

9.5 Which of the following do not appear in the costing system?

   (i)   Corporation tax
  (ii)   Dividends
  (iii) Goodwill
  (iv)   Charitable donations

  A   (i), (ii) and (iii)
  B   (ii), (iii) and (iv)
  C   (i), (ii) and (iv)
  D   (i), (ii), (iii) and (iv)

9.6 The charge of depreciation is different between financial and costing.

  This is because:

  A   In the financial accounts, this charge is normally based solely upon the passage of time, whereas in costing it may be a variable charge.
  B   In financial accounting, depreciation is a fixed amount based on machine/man hours and costing is a time period cost.
  C   Under financial accounting, depreciation is based on straight line and costing is on reducing balance.
  D   Under financial accounting, depreciation is based on reducing balance and costing is based on straight line.

9.7 Which of the following would not explain a discrepancy in profits between the financial ledger and the cost ledger?

  A   Interest on capital
  B   Differences in treatment of production overhead costs
  C   Differences in stock valuation
  D   Differences in treatment of sales

9.8 A company uses standard costing and an integrated accounting system.

  The accounting entries for an adverse labour efficiency variance are

  A   Debit WIP control account
      Credit labour efficiency variance account
  B   Debit labour efficiency variance account
      Credit WIP control account
  C   Debit wages control account
      Credit labour efficiency variance account
  D   Debit labour efficiency variance account
      Credit wages control account

☑ Multiple choice solutions

9.1 **B**

	£
Profit per financial accounts	158,500
Less: Difference in opening stock	−2,120
Less: Difference in closing stock	−1,952
	154,628

9.2 **A**

The entry would be DR work-in-progress control account and CR stores control account. See Question 10.10 concepts and definitions.

9.3 **A**

In an integrated cost and financial accounting system, the accounting entries for factory overhead absorbed would be

DR WIP control account

CR overhead control account.

9.4 **A**

The book-keeping entries in a standard cost system when the actual price for raw materials is less than the standard price are

DR Raw materials control account

CR Raw materials price variance account.

9.5 **D**

Neither corporation tax, dividends, goodwill nor charitable donations would appear in the costing system.

9.6 **A**

The charge of depreciation is different between financial and costing because, in the financial accounts, this charge is normally based solely upon the passage of time, whereas in costing it may be a variable change.

9.7 **A**

Notional interest on capital employed in production is often included in the cost accounts to reflect the normal cost of capital rather than the opportunity cost of investing it outside the business.

9.8 **B**

A company which found that they had an adverse labour efficiency variance should

Debit labour efficiency variance account

Credit WIP control account.

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Job and Batch Costing

10

? Concepts and definitions questions

10.1   What is job costing?

10.2   State four items which would appear on a cost sheet:

   (i)
  (ii)
 (iii)
 (iv)

10.3   What is batch costing?

10.4   When products are made in batches for stock, the quantity to be produced will be determined by:

   (i)
  (ii)
 (iii)
 (iv)

10.5   Company A bases its estimates on the following formula:

Total cost = Prime cost + 40% overhead
Selling price = Total cost + 25% profit
Estimates for two jobs show

	Job X	Job Y
Direct materials	200	100
Direct wages £5 per hour	500	600
Prime cost	700	700

Calculate the selling price of each job. Is this the best way to price a job?

10.6   State three discrepancies which could appear between a job cost card and the financial accounts:

   (i)
  (ii)
 (iii)

Questions 10.7–10.9 are based on the following information:

A company specialises in printing advertising leaflets and is in-the-process of preparing its price list. The most popular requirement is for a folded leaflet made from a single sheet of A4 paper. From past records and budgeted figures, the following data have been estimated for a typical batch of 10,000 leaflets.

Artwork £65
Machine setting 4 hours at £22 per hour
Paper £12.50 per 1,000 sheets
Ink and consumables £40
Printers wages 4 hours at £8 per hour
General fixed overheads are £15,000 per period during which a total of 600 labour hours are expected to be worked.
The firm wishes to achieve 30% profit on sales.

10.7   Calculate the selling price per thousand leaflets for quantities of 10,000 and 20,000 leaflets.

10.8   Calculate the profit for the period if 64 batches of 10,000 and 36 batches of 20,000 were sold and costs and revenues were as budgeted.

10.9   Comment on the results achieved in the period.

✅ **Concepts and definitions solutions**

10.1   Job costing is a form of specific order costing in which costs are attributed to individual jobs.

10.2   Four items which would appear on a cost sheet are

   (i)   Materials purchased specifically for the job
   (ii)   Materials drawn from stock
   (iii)   Direct wages
   (iv)   Direct expenses.

10.3   Batch costing is a form of specific order costing in which costs are attributed to batches of products.

10.4   Batch determination

   When products are made in batches for stock, the batch size will be determined by:

   (i)   The rate of consumption
   (ii)   Storage costs
   (iii)   Time required to take down and set up production facilities
   (iv)   Capacity available in relation to other requirements of the company.

10.5   Job costing worked example

	Job X	*Job Y*
Direct materials	200	100
Direct wages	500	600
Add: 40% overhead	280	280
Add: 25% of total cost	245	245
Selling price	£1,225	£1,225

   Whatever method is chosen for overhead, there will be an argument to use another method. In job Y, direct wages were higher which would indicate that more workers were used on this job or the same number of workers took longer. So if overhead was based on labour hours, job Y should have been more expensive than job X.

10.6   Discrepancies between job cost card and financial accounts

   (i)   Material requisition on job card not recorded
   (ii)   Direct labour shown as indirect
   (iii)   Over/under absorption of various overheads.

10.7   Job costing worked example

	Produces	*Produces*
	10,000	20,000
Artwork	65	65
Machine setting (4 × 22)	88	88
Paper (12.50 × 10) (12.50 × 20)	125	250
Ink and consumables	40	80
Printers wages (4 × 8) (8 × 8)	32	64
	350	547

Fixed overheads absorbed	100	200
£25 per labour hour		
Total cost	450	747
Profit 30% $\left(\dfrac{3}{7} \times 450\right)\left(\dfrac{3}{7} \times 747\right)$	193	320
Selling price	643	1,067
Selling price per 1,000	£64	£53

10.8 Profit for the period

	£
Revenue from 10,000 (64 × £64 × 10)	40,960
Revenue from 20,000 (36 × £53 × 20)	38,160
	79,120
Direct costs 10,000 (64 × £350)	22,400
Direct costs 20,000 (36 × £547)	19,692
	42,092
Fixed overheads	15,000
	57,092

Profit = £79,120 − £57,092 = £22,028

10.9 Comment on results

   (i)   Actual hours worked (64 × 4) + (36 × 8) = 544
  (ii)   Budgeted hours 600
 (iii)   56 hours of excess capacity
 (iv)   Find more 10,000 leaflet jobs to fill capacity since profit per labour hour is higher.

$$10{,}000 \text{ leaflet job} = \frac{£640 \times 30\%}{4} = £48$$

$$20{,}000 \text{ leaflet job} = \frac{£1{,}060 \times 30\%}{8} = £39.75$$

⟨?⟩ **Multiple choice questions**

10.1   The following items may be used in costing jobs:

  (i)   Actual material cost
 (ii)   Actual manufacturing overheads
(iii)   Absorbed manufacturing overheads
(iv)   Actual labour cost

Which of the following are contained in a typical job cost?

A   (i), (ii) and (iv)
B   (i) and (iv)
C   (i), (iii) and (iv)
D   (i), (ii), (iii) and (iv)

Questions 10.2–10.5 are based on this scenario:

A printing and publishing company has been asked to provide an estimate for the production of 100,000 programmes for the Cup Final 64 pages (32 sheets of paper)

There are four operations in the setup.

1   *Photography* – Each page requires a photographic session costing £150 per session.
2   *Setup costs* – A plate is required for each page. Each plate requires 4 hours of labour at £7 per hour and £35 of materials. Overheads are absorbed at £9.50 per labour hour.
3   *Printing* – Paper costs £12 per 1,000 sheets. Wastage is expected to be 2% of input. Other costs are £7 per 500 programmes and 1,000 programmes are printed per hour of machine time. Overheads are absorbed in printing at £62 per machine hour.
4   *Binding* – These costs are recovered at £43 per hour and 2,500 programmes can be bound in an hour. Profit margin of 10% selling price is needed.

10.2   The printing costs for the job are

  A   44,721
  B   45,632
  C   46,784
  D   47,520

10.3   The total cost for the job is

  A   64,568
  B   65,692
  C   66,318
  D   67,474

10.4   The selling price of a programme is

  A   70p
  B   71p
  C   72p
  D   75p

10.5   What would be the additional costs charged to the job, if the labour efficiency ratio achieved versus estimate in setup is 90%?

    A   £423.80
    B   £446.20
    C   £469.30
    D   £487.10

The following data are to be used for Questions 10.6 and 10.7 below:

A firm uses job costing and recovers overheads on direct labour.

Three jobs were worked on during a period, the details of which were

	Job 1	*Job 2*	*Job 3*
	£	£	£
Opening work-in-progress	8,500	0	46,000
Material in period	17,150	29,025	0
Labour for period	12,500	23,000	4,500

The overheads for the period were exactly as budgeted £140,000.

Jobs 1 and 2 were the only incomplete jobs.

10.6   What was the value of closing work-in-progress?

    A   £81,900
    B   £90,175
    C   £140,675
    D   £214,425

10.7   Job 3 was completed during the period and consisted of 2,400 identical circuit boards. The firm adds 50% to total production costs to arrive at a selling price.

    What is the selling price of a circuit board?

    A   It cannot be calculated without more information
    B   £31.56
    C   £41.41
    D   £58.33

The following data are to be used for the Questions 10.8–10.10:

A firm makes special assemblies to customers' orders and uses job costing. The data for a period are

	Job number *AA10*	*Job number* *BB15*	*Job number* *CC20*
	£	£	£
Opening WIP	26,800	42,790	0
Material added in period	17,275	0	18,500
Labour for period	14,500	3,500	24,600

The budgeted overheads for the period were £126,000

10.8   How much overhead should be added to job number CC20 for the period?

    A   £24,600
    B   £65,157
    C   £72,761
    D   £126,000

10.9   Job number BB15 was completed and delivered during the period and the firm wishes to earn $33\frac{1}{3}\%$ profit on sales.

What is the selling price of job number BB15?

    A   £69,435
    B   £75,521
    C   £84,963
    D   £138,870

10.10   What was the approximate value of closing WIP at the end of the period for job number AA10 and CC20?

    A   £58,575
    B   £101,675
    C   £147,965
    D   £217,323

✅ Multiple choice solutions

10.1 **A**

Only the actual figures are used in job cards not those already absorbed.

10.2 **C**

Printing costs

	£
Paper $\left(\dfrac{100,000 \times 32}{1,000} \times £12 \div 98 \right)$	39,184
Other costs $\left(\dfrac{100,000 \times £7}{500} \right)$	1,400
Machine hours $(100 \times £62)$	6,200
	46,784

10.3 **A**

Total costs

		£
1 Photography $(64 \times £150)$		9,600
2 Set up	£	
Labour $(64 \times 4 \times £7)$	1,792	
Materials $(64 \times £35)$	2,240	
Overhead $(256 \times £9.50)$	2,432	
		6,464
3 Printing (as per Question 11.2)		46,784
4 Binding $(40 \times £43)$		1,720
		64,568

10.4 **C**

$$\text{Selling price} = \frac{£64,568}{0.9} = \frac{£71,742}{100,000} = 72 \text{ pence}$$

10.5 **C**

Estimated setup hours $= 256$

$$\frac{256}{0.9} = 284.4 \text{ hours}$$

Additional costs $(284.4 - 256) \times £16.50 = £469.30$

10.6 **D**

	Job 1	Job 2	Total
Opening WIP	8,500	–	8,500
Materials	17,150	29,025	46,175
Labour	12,500	23,000	35,500
Overheads	43,750	80,500	124,250
	81,900	132,525	214,425

Total labour for period $= £(12,500 + 23,000 + 4,500) = £40,000$

Overhead absorption rate $= \dfrac{£140,000}{£40,000} = 3.5$

10.7   **C**

	Job 3

	Job 3
Opening WIP	46,000
Labour	4,500
Overheads (3.5 × £4,500)	15,750
Total production costs	66,250
Profit 50%	33,125
Selling price of 2,400	99,375
Selling price per unit	£41.41

10.8   **C**

Overhead absorption

$$\frac{24,600}{24,600 + 14,500 + 3,500} \times £126,000 = £72,761$$

10.9   **C**

	£
WIP	42,790
Materials	–
Labour	3,500
Overhead $\left(\dfrac{3,500}{24,600 + 14,500 + 3,500} \times £126,000 \right)$	10,352
	56,642

Sales price $= \dfrac{£56,642}{66^2/_3} \times 100 = £84,963$

10.10   **D**

	AA10	*CC20*	*Total*
Opening WIP	26,800	–	
Materials	17,275	18,500	
Labour	14,500	24,600	
Overhead	42,887	72,761	
Total	101,462	115,861	217,323

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Contract Costing

11

❓ Concepts and definitions questions

11.1   What is contract costing?

11.2   In contract costing, each contract is a separately identifiable cost unit. Which costs would be included in such an account?

   (i)
  (ii)
 (iii)
 (iv)

11.3   What is the relationship between architects' certificates and retention money?

11.4   When we calculate an interim profit in contract costing what are the five steps that need to be taken?

  (i)   *Step 1*
 (ii)   *Step 2*
(iii)   *Step 3*
(iv)   *Step 4*
 (v)   *Step 5*

Contract costing – a worked example

Questions 11.5–11.8 are based on the following information:

Contract 815 commenced during 2005 and has a fixed contract price of £250,000. The costs incurred during the year 2005 for materials, wages and sub-contractors charges were £120,000. Plant costing £25,000 was purchased during 2005 specifically for contract 815.

At the end of 2005:

  (i)   Plant was valued at £20,000
 (ii)   Unused materials on the site were valued at £20,000
(iii)   Architects' certificates had been issued showing that the value of work completed was £100,000.

It is estimated that further costs totalling £75,000 would be incurred in order to complete the job.

Retention money representing 20% of the certified value of the work completed has been held back. The balance has been paid. The contractor credits the contract account with the full value of the architects' certificates as they are received.

11.5   Calculate the total estimated contract costs.

11.6   Calculate the contract profit.

11.7   Calculate the profit to be taken in 2005.

11.8   Write up the ledger accounts for:

    (i)   Contract number 815
    (ii) The client account

Questions 11.9 and 11.10 are based on the following data:

GUF Fencing Ltd has a contract for security perimeter fencing with a premier league football club.

Work is part complete at the year end 31st December 2005. George, his accountant, does not understand contract accounting but he is a meticulous book-keeper and has kept the following information:

		£'000
Contract price		3,000
Direct materials issued	680	
Returned to suppliers	30	
Transferred to other jobs	30	
On site at 31/12	75	
Direct wages		
Paid	450	
Accrued	20	
Direct expenses		
Paid	75	
Accrued	25	
Value of work certified		
to date		1,600
Received from client		1,200
Plant installed on site cost		200
Depreciation to 31/12		50
Estimated cost to complete		800

Progress payments are based on architects' certificates less 25% retention.

11.9   Calculate attributable profit for the year to December 2005.

11.10   Prepare the contract and client ledger accounts.

☑ **Concepts and definitions solutions**

11.1   Contract costing is a form of specific order costing in which costs are attributed to individual contracts.

11.2   Contract cost accounting

Costs to be included:

  (i)   Direct materials
 (ii)   Direct wages
(iii)   Direct expenses
(iv)   Indirect costs.

11.3   Architects' certificates and retention money

As the work on a contract proceeds, the client's architect will issue a certificate which indicates that so much of a contract has been completed and that the contractor is due to be paid a certain amount of money. This is known as an architects' certificate.

Normally the contractor would receive a proportion of this figure, since some of the money would be held back by the architect. This is to ensure that any faults have been rectified before any final payment is due. This is known as retention money.

11.4   Calculation of interim profit

Step 1 – Determine the total sales value of the contract.

Step 2 – Compute the total expected costs to complete the contract. This will consist of:

  (i)   The actual costs incurred to date
 (ii)   The estimated future costs necessary to complete the contract

Step 3 – The expected overall contract profit

    = Step 1 – Step 2

Step 4 – Calculate the attributable profit to date

$$= \frac{\text{Value of certified work to date}}{\text{Total sales value of contract}} \times \text{expected overall profit}$$

Step 5 – The profit to be taken this year is the cumulative attributable profit calculated at Step 4 less than any profit which has been taken on previous years.

11.5   Calculation of contract costs

Actual costs incurred to date

	£
Materials, wages and subcontractors	120,000
Less: Materials on site at end 2005	20,000
	100,000
Plant depreciation (£25,000 − £20,000)	5,000
Contract costs incurred to end 2005	105,000
Add: Estimated future costs to complete contract	75,000
So total estimated contract costs	180,000

11.6   Contract profit

	£
Fixed contract price	250,000
Less: Contract costs	180,000
Contract profit (est)	70,000

11.7   Profit to be taken in 2005

$$\frac{\text{Work certified}}{\text{Contract price}} \times \text{estimated contract profit}$$

$$= \frac{£100,000}{£250,000} \times £70,000$$

$$= £28,000$$

11.8   (i)   Contract number 815

	£		£
Materials, wages and subcontractors	120,000	Work certified	100,000
		Materials c/d	20,000
Plant at cost	25,000	Plant c/d	20,000
Profit and loss	28,000	WIP c/d	33,000
	173,000		173,000

(ii)   The client account

	£
WIP b/d	33,000
Materials b/d	20,000
Plant b/d	15,000

11.9   Further worked example

Actual costs incurred to date

	£'000	£'000
Materials issued		680
Less: Returns	30	
Transferred to other jobs	30	
On site 31/12	75	135
		545
Wages paid and accrued		470
Direct expenses paid and accrued		100
Plant depreciation		50
Contracts costs incurred to date		1,165

Contract costs to completion	£'000
Incurred	1,165
Estimated future costs	800
Total estimated contract costs	1,965
Fixed contract price	3,000
Total estimated costs	1,965
Estimated profit	1,035

$$\text{Attributable profit} = \frac{\text{Work certified}}{\text{Contract price}} \times \text{contract profit}$$

$$= \frac{1,600}{3,000} \times 1,035$$

$$= £552,000$$

11.10

Contract account

	£'000		£'000
Material issued	680	Material returns	30
Wages		Transfer	30
Cash	450	Work certified	1,600
Accrued	20	Plant c/d	150
Direct expenses		Materials c/d	75
Paid	75	Wip c/d	117
Accrued	25		
Plant	200		
Profit and loss	552		
	2002		2002

Client contractee account

	£'000		£'000
Contract account		Cash received	1,200
Certified work	1,600	Balance c/d	400
	1,600		1,600

⟨?⟩ Multiple choice questions

Questions 11.1–11.3 are concerned with the following information:

Contract costing	£'000
Costs incurred to date	2,860
Costs estimated to complete contract	3,920
Value of work certified to date	3,310
Total value of contract	7,100

11.1   What was the total contract profit?

    A   £300,000
    B   £320,000
    C   £340,000
    D   £360,000

11.2   Calculate attributable profit using costs as a measure of completion.

    A   £134,985
    B   £135,870
    C   £136,250
    D   £137,580

11.3   Attributable profit using sales value as a measure of completion is

    A   £149,183
    B   £150,571
    C   £151,432
    D   £152,237

11.4   A construction company has the following data concerning one of its contracts.

	£m
Contract price	2
Value certified	1.3
Cash received	1.2
Costs incurred	1.05
Cost of work certified	1

    The profit to be attributed to the contract is

    A   £272,485
    B   £274,586
    C   £276,923
    D   £280,410

11.5   Which one of the following is not a contract cost?

    A   Direct wages
    B   Depreciation of plant
    C   Sub-contractors' fees
    D   Architects' certificates

11.6 The attributable profit to date on a contract should reflect the amount of work that has been completed so far. It can be calculated as follows:

A $\dfrac{\text{Value of work certified to date}}{\text{Total sales value of contract}} \times \text{expected profit}$

B $\dfrac{\text{Total sales value of contract}}{\text{Value of work certified to date}} \times \text{expected profit}$

C $\dfrac{\text{Value of work certified to date}}{\text{Total sales value of contract}} \div \text{expected profit}$

D $\dfrac{\text{Total sales value of contract}}{\text{Value of work certified to date}} - \text{expected profit}$

11.7 State which of the following are characteristics of contract costing.

  (i) Homogenous products
 (ii) Customer-driven production
(iii) Short-timescale from commencement to completion of the cost unit

A (i) and (ii)
B (ii) and (iii)
C (i) and (iii)
D (ii) only

11.8 Which industries would use contract costing?

  (i) Construction
 (ii) Civil engineering
(iii) Financial services
(iv) Motor industry

A (i) and (ii)
B (ii) and (iii)
C (iii) and (iv)
D (i), (ii) and (iv)

11.9 The cost of any sub-contracted work is

A A direct expense of a contract and is debited to the contract account
B An indirect expense of a contract and is debited to the contract account
C A direct expense of a contract and is debited to the client account
D An indirect expense of a contract and is debited to the client account

11.10 Progress payments received by the contractor from the client are

A Debited to the contract account
B Credited to the contract account
C Debited to the client account
D Credited to the client account

✅ Multiple choice solutions

11.1 **B**

Contract profit

	£'000
Contract value	7,100
Costs incurred	(2,860)
Costs to complete	(3,920)
So expected profit	£320,000

11.2 **A**

Using costs

$$\frac{2,860}{6,780} \times £320,000 = £134,985$$

11.3 **A**

Using value

$$\frac{\text{Value certified}}{\text{Total sales value}} \times £320,000$$

$$= \frac{3,310}{7,100} \times £320,000 = 149,183$$

11.4 **C**

Value certified = £1.3 million

$$\text{Less Cost of work certified} = \frac{£1.0 \text{ million}}{£0.3 \text{ million (or } £300,000)}$$

$$\text{So } £300,000 \times \frac{\text{cash received}}{\text{value certified}}$$

$$= \frac{£300,000 \times £1.2 \text{ million}}{£1.3 \text{ million}}$$

$$= £276,923$$

11.5 **D**

Architects' certificates – they are concerned with payments.

11.6 **A**

The attributable profit is calculated using the formula:

$$\frac{\text{Value of work certified to date} \times \text{expected profit}}{\text{Total sales value of contract}}$$

11.7 **D**

The only characteristic of contract costing mentioned is that it is customer-driven production.

11.8 **A**

Construction and civil engineering would be industries which use contract costing, since most jobs would carry on into another financial year.

11.9 **A**

The cost of any sub-contracted work is a direct expense of a contract and is debited to the contract account.

11.10 **D**

Progress payments received by the contractor are credited to the client account.

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Process Costing

<div style="text-align: right; font-size: 3em; font-weight: bold;">12</div>

? Concepts and definitions questions

12.1 What is process costing and where can it be found?

12.2 What is a normal loss?

12.3 Calculate the cost per tonne from the following data:

	£
Input 5,000 tonnes	15,000
Labour cost	10,000
Overhead	6,000

Normal loss is 10% of input and has a scrap value of £3 per tonne.

Write up the process account and the normal loss account.

12.4 Distinguish between an abnormal loss and an abnormal gain.

12.5 Calculate the net cost/profit of the abnormal loss/gain from the following data:

Input quantity	5,000 kg at £5 per kg
Normal loss	10%
Process costs	£17,500
Actual output	4,200 kg

Losses are sold for £2 per kg.

12.6 A manufacturer starts a process on 1st January. In the month of January, he starts work on 20,000 units of production. At the end of the month there are 5,000 units still in process which are 75% complete. Costs for the period were £20,625.

Calculate:

 (i) The value of completed units at the end of January
(ii) The value of WIP at the end of January

12.7 What are the six step methods for process costing?

    (i) *Step 1*
    (ii) *Step 2*
    (iii) *Step 3*
    (iv) *Step 4*
    (v) *Step 5*
    (vi) *Step 6*

Questions 12.8–12.10 are based on the following information:

C Ltd manufactures a range of products and the data below refer to one product which goes through one process only. The company operates a 13 four-weekly reporting system for process and products costs and the data given below relate to Period 10.

There was no opening WIP stock.

5,000 units of materials input at £2.94 per unit entered the process.

	£
Further direct materials added	13,830
Direct wages incurred	6,555
Production overhead	7,470

Normal loss is 3% of input.

Closing WIP was 800 units but these were incomplete, having reached the following percentages of completion for each of the elements of cost listed:

	%
Direct materials added	75
Direct wages	50
Production overhead	25

270 units were scrapped after a quality control check when the units were at the following degrees of completion.

	%
Direct materials added	$66\frac{2}{3}$
Direct wages	$33\frac{1}{3}$
Production overhead	$16\frac{2}{3}$

Units scrapped, regardless of the degree of completion, are sold for £1 each and it is company policy to credit the process account with the scrap value of normal loss units.

12.8 Prepare the Period 10 process account.

12.9 Calculate the abnormal gain or loss account.

12.10 Suggest two causes of

    (i) Abnormal loss
    (ii) Abnormal gain

✅ **Concepts and definitions solutions**

12.1   Process costing

Process costing applies when goods result from a sequence of continuous or repetitive operations or processes. It can be found in brewing, oil refining and food processing.

12.2   A normal loss is the amount of loss that is expected from the operation of a process. This loss is expected and is based on past experience and is also considered unavoidable.

12.3   Process and normal loss account

Process account

	Tonnes	£		Units	Tonnes	£
Materials	5,000	15,000	Normal loss	500	3	1,500
Labour cost		10,000	Output	4500	43.33	19,500
Overhead		6,000				
	5,000	21,000		5,000		21,000

$$\text{Cost per tonne of good output} = \frac{\text{total costs} - \text{scrap sales}}{\text{Expected output}} = \frac{21,000 - 1,500}{4,500}$$

$$= £43.33/\text{tonne}$$

Normal loss account

	Tonnes	£		Tonnes	£
Process account	500	1,500	Cash/bank	500	1,500

12.4   Abnormal loss and abnormal gain

The extent to which the actual loss exceeds the normal loss is referred to as the abnormal loss.

An abnormal gain is where the normal loss is less than expected, for example, if material input was 1,000 kgs and normal loss was 10%, if actual output was 950 kgs there would be an abnormal gain of 50 and if actual output was 875 kgs then there would be an abnormal loss of 25 kgs.

12.5   Process account

	kg	£		kg	£	£
Materials	5,000	25,000	Normal loss	500	2	1,000
Process costs		17,500	Output	4,200	9.22	38,724
			Abnormal loss	300	9.22	2,766
	5,000	42,500		5,000		42,490

$$\text{Cost of good output} = \frac{42,500 - 1,000}{4,500} = £9.22/\text{kg}$$

Net cost is therefore £9.22 − £2 = £7.22/kg

300 × £7.22 = £2,166

Abnormal gain account

	kg	£	kg		£
Process a/c	300	2,766	Cash/bank		600
			P&L a/c		2,166

12.6

	Units	Percentage completion	Equivalent units
Started and completed	15,000	1	100%
Work-in-process	5,000	¾	75%
			18,750

$$\text{Cost per equivalent unit} = \frac{£20,625}{18,750} = £1.10$$

Value of completed unit $= 15,000 \times £1.10 = £16,500$

Value of WIP $= 3,750 \times £1.10 = £4,125$

12.7 Six step methods for process costing

Step 1 – Trace the physical flow of units so that units input to the production process are reconciled with units output or in process at the end of the period.

Step 2 – Convert the physical units determined in Step 1 into equivalent units of production for each factor of production.

Step 3 – Calculate the total cost for each factor for the period.

Step 4 – Divide the total costs by equivalent units to establish a cost per equivalent unit.

Step 5 – Multiply equivalent units by the cost per equivalent unit to cost out finished production and work-in-process.

Step 6 – Write up ledger accounts.

12.8   Process account

	Units	£		Units	£
Input	5,000	14,700	Normal loss	150	150
Direct materials		13,830	Closing WIP (W1)	800	5,160
Direct wages		6,555	Abnormal loss (W1)	120	696
Production overhead		7,470	Output (W1)	3,930	36,549
	5,000	42,555		5,000	42,555

(W1) Equivalent units table

	Total	%	Input EU	%	Material added EU	%	Wages EU	%	Ohd EU
Normal loss	150	0	–	0	–	0	–	0	–
Closing WIP	800	100	800	75	600	50	400	25	200
Abnormal loss	120	100	120	66⅔	80	33⅓	40	16⅔	20
Output	3,930	100	3,930	100	3,930	100	3,930	100	3,930
			4,850		4,610		4,370		4,150

	£	£	£	£
Costs	14,700	13,830	6,555	7,470
Normal loss scrap value	(150)			
	£14,550	£13,830	£6,555	£7,470

Cost/equivalent unit =	14,550	13,830	6,555	7,470
	4,850	4,610	4,370	4,150
	£3	£3	£1.5	£1.8

(W1)

Value of output = $3,930 \times (3 + 3 + 1.5 + 1.8) = 36,549$

Value of WIP = $(800 \times 3) + (600 \times 3) + (400 \times 1.5) + (200 \times 1.8) = 5,160$

Value of abnormal loss = $(120 \times 3) + (80 \times 3) + (40 \times 1.5) + (20 \times 1.8) = 696$

12.9   Abnormal loss account

	£		£
Process	696	Normal loss	120
		Profit and loss account	576
	696		696

12.10   The abnormal loss could have resulted from the use of poorer quality materials than normal or from inexperienced employees operating the process wrongly.

Abnormal gain could come from higher grade materials and higher grade labour.

⟨?⟩ Multiple choice questions

Questions 12.1–12.3 are based on the following information:

Input quantity	1,000 kg
Normal loss	10% of input
Process costs	£14,300
Actual output	880 kg
Losses are sold for £8 per kg	

12.1   Normal loss is equal to

    A   10 kg
    B   50 kg
    C   100 kg
    D   120 kg

12.2   The cost per unit is equal to

    A   £10
    B   £15
    C   £20
    D   £25

12.3   The impact on profit and loss account as a result of the abnormal loss would be

    A   £120
    B   £130
    C   £140
    D   £150

Questions 12.4–12.9 are based on the following extracts:

Process A

Direct material	2,000 kg at £5 per kg
Direct labour	£7,200
Process plant time	140 hours at £60 per hour

Process B

Direct material	1,400 kg at £12 per kg
Direct labour	£4,200
Process plant time	80 hours at £72.50 per hour

The department overhead for the period was £6,840 and is absorbed into the costs of each process on direct labour cost.

	Process A	*Process B*
Expected output was	80% of input	90% of input
Actual output was	1,400 kg	2,620 kg

There is no finished stock at the beginning of the period and no WIP at either the beginning or the end of the period.

Normal loss is sold for scrap for 50p per kg from process A and £1.825 per kg from process B.

12.4   The cost per kg of process A is equal to

   A   £15.62
   B   £16.73
   C   £18.58
   D   £19.62

12.5   The cost per kg of process B is equal to

   A   £20.50
   B   £21.25
   C   £21.75
   D   £22.25

12.6   The abnormal loss in process A is

   A   100
   B   200
   C   300
   D   400

12.7   The abnormal gain in process B is

   A   100
   B   200
   C   300
   D   400

12.8   The value of the finished goods at the end of process B is

   A   £55,235
   B   £56,329
   C   £56,567
   D   £56,985

12.9   The departmental overhead absorption rate is what percentage of direct labour costs?

   A   40%
   B   45%
   C   55%
   D   60%

12.10   The following details relate to the main process of X Ltd, a chemical manufacturer.

   Opening WIP

   2,000 litres fully completed as to materials and 40% complete as to conversion.

   Material input   24,000
   Normal loss is 10% of input
   Output to process 2   19,500 litres

   Closing WIP

   3,000 litres fully completed as to materials and 45% complete as to conversion.

The numbers of equivalent units to be included in X Ltd's calculation of the cost per equivalent unit, using a weighted average basis of valuation are

	Materials	Conversion
A	21,400	20,850
B	22,500	21,950
C	22,500	20,850
D	23,600	21,950

☑ **Multiple choice solutions**

12.1   **C**

Normal loss is equal to 10% of 1,000 kg = 100 kgs

12.2   **B**

The cost per unit

Process costs	£14,300
Less: Normal loss scrap	800
	£13,500

$$\text{Cost per unit} = \frac{£13,500}{900}$$

$$= £15$$

12.3   **C**

	£
The abnormal loss value (20 × £15)	300
Less: Scrap value (20 × £8)	160
	140

12.4   **C**

Process A

$$\text{Cost/kg} = \frac{\text{Total cost} - \text{scrap value of normal loss}}{\text{Expected output}}$$

Total costs

	£
Direct materials (2,000 kg × £5)	10,000
Direct labour	7,200
Process plant time (140 hours × £60)	8,400
Departmental overhead	4,320
	29,920
Less: Scrap value of normal loss	
(20% × 2,000 × 0.50p)	200
	29,720

$$\text{Cost per kg} = \frac{£29,720}{1,600 \text{ kg}}$$

$$= £18.575/\text{kg}$$

So C to nearest pence.

12.5 **C**

<div align="center">Process B</div>

	£
Process A (1,400 kg × £18.575)	26,005
Direct labour	4,200
Direct materials (1,400 kg × £12)	16,800
Process plant time (80 × £72.50)	5,800
Departmental overhead	2,520
	55,325
Less: Scrap value of normal loss	
(2,800 kg × 10% × £1.825)	511
	54,814

$$\text{Cost per kg} = \frac{54,814}{2,520}$$

$$= £21.75/\text{kg}$$

12.6 **D**

<div align="center">Process A</div>

Input	2,000	Process	1,400
		Normal loss	400
		Abnormal loss	200
	2,000		2,000

12.7 **A**

<div align="center">Process B</div>

Input from process A	1,400	Normal loss	280
Direct materials	1,400	Finished goods	2,620
Abnormal gain	100		
	2,900		2,900

Abnormal gain = 100 kg

12.8 **D**

Value of finished goods = 2,620 × £21.75

= £56,985

12.9 **D**

$$\text{Departmental overhead absorption rate} = \frac{£6,840}{£7,200 + £4,200}$$

$$= 60\% \text{ of direct labour cost}$$

12.10   **D**

Process account (units)

Opening WIP	2,000	Normal loss	2,400
Input	24,000	Output	19,500
		Closing WIP	3,000
		Abnormal loss	1,100
	26,000		26,000

Equivalent units table

	Materials		*Conversion*	
	%	EU	*%*	EU
Output	100	19,500	100	19,500
Abnormal loss	100	1,100	100	1,100
Closing WIP	100	3,000	45	1,350
		23,600		21,950

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Managerial Reports in a Service Organisation

13

[?] Concepts and definitions questions

13.1 What is service costing?

13.2 State three industries where service costing can be applied.

   (i)
   (ii)
   (iii)

13.3 Cost units for service industries

Match the following cost units with the following services:

Service	*Cost unit*
Electricity generation	Passenger miles
Restaurants	Patient days
Carriers	Miles travelled
Hospitals	Meals served
Passenger transport	Kilowatt hours

13.4 State four differences between a service industry and a manufacturing industry.

   (i)
   (ii)
   (iii)
   (iv)

13.5 State four differences between a manufacturing and a service cost statement.

   (i)
   (ii)
   (iii)
   (iv)

13.6   What is a composite cost unit?

Questions 13.7–13.10 are based on the following scenario:

George and Helen have recently set up their own auditing practice. They have agreed to take a salary of £20,000 per annum in their first year of trading. They have purchased two cars at £13,000 each and expect to use them for three years. At the end of three years, the cars have an expected resale value of £4,000. Straight line depreciation is to be used.

Each expects to work for 8 hours per day, 5 days per week and for 45 weeks per year. They refer to this as available time.

Around 25% of available time is expected to be dealing with administration matters related to their own business and in the first year there will be an idle time of 22.5% of available time. The remainder of available time is expected to be charged to clients.

They agree that their fees should be based on:

  (i)   An hourly rate for productive client work
 (ii)   An hourly rate for travelling to/from clients
(iii)   Rate per mile travelled to/from clients

They expect that the travelling time will equal 25% of their chargeable time and will cover 18,000 miles.

This time should be charged at 1/3 of their hourly rate.

Other costs include

	£
Electricity	1,200
Fuel for vehicles	1,800
Insurance – office	600
Insurance – vehicles	800
Mobile telephone	1,200
Office rent and rates	8,400
Office telephone	1,800
Postage	500
Secretarial costs	8,400
Vehicle repairs	1,200
Vehicle road tax	280

13.7   The hourly rate for client work was

13.8   The hourly rate for travelling to/from clients was

13.9   The rate per mile travelled to/from clients was

13.10   The method of cost accounting used in the last three examples is

☑ Concepts and definitions solutions

13.1 Service costing is the cost accounting method that can be applied when the business provides a service or a service function within a manufacturing company.

13.2 Industries using service costing

   (i)   Road haulage
  (ii)   Hotels
 (iii)   Electricity generation.

13.3 *Service*   *Cost unit*

   Electricity generation   Kilowatt hours
   Restaurants   Meals served
   Carriers   Miles travelled
   Hospitals   Patient days
   Passenger transport   Passenger miles

13.4 Differences between service and manufacturing industry

   (i)   *Intangibility*: Output takes the form of performance, for example, a waiter in a restaurant rather than some tangible good.
  (ii)   *Heterogeneity*: The standard of service industries is variable due to large human output.
 (iii)   *Simultaneous production and consumption*: Service industries do not have the luxury of storing their product; it is produced and consumed simultaneously.
  (iv)   *Perishability*: Related to (iii) – if an airline takes off with excess capacity that revenue is then lost forever.

13.5 Manufacturing and service cost statement

   The major differences between a manufacturing and a service cost statement are

   (i)   In the service sector there are no flexed budgets.
  (ii)   In the service sector there is a lack of detailed variance analysis.
 (iii)   Stock figures in service industries will be low in relation to turnover.
  (iv)   Service industries have their own performance measures, for example, hotels occupancy rates.

13.6 Composite cost unit

   A major problem for service industries is to decide a suitable unit to measure the service. Composite cost units take into account a number of factors, for example, in the road haulage industry, tonne miles travelled takes into account not only the time and distance travelled but also the level at which the service is given to the public.

Workings for Questions 13.7–13.10

	Professional services (£)	Vehicles (£)
Salaries	40,000	
Car depreciation		6,000
Electricity	1,200	
Fuel		1,800
Insurance		
Office	600	
Vehicles		800
Telephone		
Mobile	1,200	
Office	1,800	
Office rent + rates	8,400	
Postage	500	
Secretarial	8,400	
Vehicle services		1,200
Road tax		280
	62,100	10,080

Hours available ($2 \times 8 \times 5 \times 45$)	3,600
Administration 25%	(900)
Idle time 22.5%	(810)
Chargeable time (hours)	1,890
Travel time 25% (hours)	472.5
Active time (hours)	1,417.5

Effective chargeable hours	
Travel time ($472.5 \times 1/3$)	157.50
+ active time ($1,417.5 \times 1$)	1,417.50
	1,575 hours

13.7   Hourly rate for client work

$$\frac{£62,100}{1,575} = £39.43 \text{ per hour}$$

13.8   Travel $= \dfrac{£39.43}{3} = £13.14$

13.9   Vehicle rate per mile $= \dfrac{£10,080}{18,000}$

$$= 56\text{p per mile}$$

13.10   The method of costing in the last three examples is service costing.

？ **Multiple choice questions**

13.1 For a company operating a fleet of delivery vehicles, which of the following would be most useful?

A   Cost per mile
B   Cost per driver hour
C   Cost per tonne mile
D   Cost per tonne carried

13.2 Which of the following are characteristics of service costing?

(i)   High levels of indirect costs as a proportion of total cost
(ii)   Use of composite cost units
(iii) Use of equivalent units

A   (i) only
B   (i) and (ii)
C   (ii) only
D   (ii) and (iii)

13.3 Which of the following is not an example of a composite cost unit?

A   Kilowatt hours
B   Meals served
C   Patient days
D   Miles travelled/tonne miles

13.4 Which of the following would be regarded as a fixed cost of a commercial transport fleet?

(i)   Road fund licence
(ii)   Insurance
(iii) Diesel
(iv)   Maintenance

A   (i) and (ii)
B   (i) and (iii)
C   (ii) and (iii)
D   (ii) and (iv)

13.5 Which of the following are key differences between the products of service industries and those of manufacturing businesses?

(i)   Intangibility
(ii)   Perishability
(iii) Heterogeneity
(iv)   Simultaneous production and consumption

A   (i) and (ii)
B   (i), (ii) and (iii)
C   (i), (ii) and (iv)
D   (i), (ii), (iii) and (iv)

Questions 13.6 and 13.7 are based on the following information:

A company specialises in carrying out tests on animals to see if they have any infection. At present the laboratory carries out 12,000 tests per annum but has the capacity to test a further 6,000 if required.

The current cost of carrying out a trial test is

	£per test
Materials	115
Technician's fees	30
Variable overhead	12
Fixed overhead	50

To increase capacity to 18,000 it would require

A   A 50% shift premium on technician's fees
B   Enable a 20% discount to be obtained on materials
C   Increase fixed costs by £700,000
D   The current fee per test is £300

13.6   The level of profit based on 12,000 tests is

   A   £1,116,000
   B   £132,000
   C   £1,164,000
   D   £1,192,000

13.7   How much would profit rise by, if 18,000 tests were carried out?

   A   £1,492,000
   B   £1,525,000
   C   £1,598,000
   D   £1,610,000

Questions 13.8, 13.9 and 13.10 are based on the following information:

A transport company has three divisions and you are given the following data.

	Division A	Division B	Division C
Sales (£'000)	200	300	250
No. of vehicles	50	20	10
Distance travelled ('000 km)	150	100	50
Identifiable fixed costs	25	30	35

Variable costs are £300,000 for the company as a whole and are estimated to be in the ratio of 1:4:5 respectively for A, B and C.

The fixed costs which are not directly identifiable are £75,000. These are shared equally between the three divisions

13.8   The contribution of division A was

   A   £120,000
   B   £145,000
   C   £170,000
   D   £180,000

13.9   The contribution per kilometre of division B was

    A   £1.25
    B   £1.40
    C   £1.50
    D   £1.80

13.10   The total net profit of the three divisions was

    A   £240,000
    B   £285,000
    C   £325,000
    D   £375,000

✅ Multiple choice solutions

13.1 C

The most useful measure would be cost per tonne mile since it measures both distance and amount carried.

13.2 B

Alternatives (i) and (ii) are valid equivalent units as used in process costing.

13.3 B

The odd one out is meals served since this only takes into account one factor.

13.4 A

Road fund licence and insurance costs are costs which are not based on activity.

Diesel and maintenance would be classified as variable costs. Maintenance costs at the very least are semi-variable costs.

13.5 D

Intangibility, perishability, heterogeneity and simultaneous production and consumption are all features of service industry and are therefore different to manufacturing industry.

13.6 A

12,000 capacity

	£'000	£'000
Fees (12,000 × 300)		3,600
Variable costs		
Materials (12,000 × £115)	1,380	
Wages (12,000 × £30)	360	
Variable overhead (12,000 × £12)	144	
		1,884
Contribution		1,716
Fixed overhead (12,000 × £50)		600
Profit		1,116

13.7 C

18,000 tests

	£'000	£'000
Fees (18,000 × £300)		5,400
Variable costs		
Materials (18,000 × £115 × 80%)	1,656	
Wages (360 + 6 × 30 × 50%)	630	
Variable overhead (144 × 150%)	216	
		2,502
Contribution		2,898
Fixed overhead		1,300
		1,598

Workings for Questions 13.8, 13.9 and 13.10

	Division A	Division B	Division C
Sales (£'000)	200	300	250
No. of vehicles	50	20	10
Distance travelled ('000 km)	150	100	50
Identifiable fixed costs	25	30	35
Variable costs	30	120	150
Fixed costs	25	25	25
Total costs	80	175	210

13.8 **C**

Division A = Sales − variable cost

= £200,000 − £30,000 = £170,000

13.9 **D**

Division B

Total contribution   £180,000
Distance travelled   100,000 km

Contribution per km = £1.80

13.10 **B**

Total net profit = £120,000 + £125,000 + £40,000 = £285,000.

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Functional Budgets

14

⁇ Concepts and definitions questions

14.1   State six aims of budgeting.

   (i)
   (ii)
   (iii)
   (iv)
   (v)
   (vi)

14.2   What is a budget?

14.3   What are the seven steps in a budget?

   (i)   *Step 1*
   (ii)   *Step 2*
   (iii)   *Step 3*
   (iv)   *Step 4*
   (v)   *Step 5*
   (vi)   *Step 6*
   (vii)   *Step 7*

14.4   The production budget needs to be translated into requirements for:

   (i)
   (ii)
   (iii)
   (iv)
   (v)

14.5   What is a budget centre?

14.6   What is the difference between a budget and a forecast?

123

14.7   Consider the following figures:

Sales   £450,000
Opening stock   £20,000
Closing stock   £30,000
Raw materials   £120,000
Direct labour   £130,000
Production overhead   £120,000
Administration   £45,000

What is the operating profit for the period?

14.8   Name six types of functional budgets.

  (i)
 (ii)
(iii)
(iv)
 (v)
(vi)

14.9   State five functions of a budget committee.

  (i)
 (ii)
(iii)
(iv)
 (v)

14.10   What is the principal budget factor?

☑ **Concepts and definitions solutions**

14.1   Aims of budgeting

   (i)   Planning and co-ordination
  (ii)   Authorising and delegating
 (iii)   Evaluating performance
 (iv)   Discerning trends
  (v)   To communicate and motivate
 (vi)   To control.

14.2   A budget may be defined as a quantitative statement, for a defined period of time which may include planned revenues, expenses, assets, liabilities and cash flows. It provides a focus for the organisation and is part of the strategic process.

14.3   Steps in a budget

   Step 1 – Sales budget
   Step 2 – Production budget
   Step 3 – Labour utilisation budget
   Step 4 – Cost of goods sold budget

   Master budget

   Step 5 – Budgeted profit and loss
   Step 6 – Cash budget
   Step 7 – Budgeted balance sheet.

14.4   Production budget
       Required for:

   (i)   Raw materials
  (ii)   Direct labour
 (iii)   Machine absorption
 (iv)   Factory overheads
  (v)   Closing stock levels.

14.5   Budget centre

   A budget centre is a section in an organisation for which control may be exercised and budgets prepared.

14.6   Budget and forecast

   A forecast is a statement of what is expected to happen, a budget is a statement of what is reasonable to believe will happen.

14.7   Master budget profit and loss account

	£	£
Sales		450,000
Cost of sales		
Opening stocks	20,000	
Raw materials	120,000	
Direct labour	130,000	
Production overhead	120,000	
	390,000	
Closing stock	30,000	360,000
Operating margin		90,000
Administration		45,000
Operating profit		45,000

14.8   Types of functional budgets

(i)   Sales
(ii)   Production
(iii)   Purchasing
(iv)   Research and development
(v)   Human resource management
(vi)   Logistics.

14.9   Budget committee

A budget committee would normally comprise of the chief executive, the management accountant and functional heads.

The functions of these committees are to

(i)   Agree overall policy objectives with regard to the budget
(ii)   Co-ordinate budgets
(iii)   Suggest amendments to budgets
(iv)   Improve budgets
(v)   Examine budgeted and actual results.

14.10   The principal budget factor is the limiting factor since this determines all other budgets.

In most companies, the level of demand determines the size and scale of the operation which is why in Question 15.3 we start off with the sales budget.

? Multiple choice questions

Questions 14.1–14.6 are based on the following data.

Loxo sells office equipment and is preparing his budget for April 2007.

	Opening stock	Budgeted sales	Selling price (£)
BAX	63	290	120
DAX	36	120	208
FAX	90	230	51

Closing stock is 30% of sales.

All three products are made using Material A, Material B, Labour Grade C and Labour Grade D.

The quantities are as follows:

	Material A	Material B	Labour C/hour	Labour D/hour
BAX	4	2	3	2
DAX	5	3	5	8
FAX	2	1	2	–
Cost	£12 per metre	£7 per cubic feet	£4 per hour	£6 per hour

Loxo's opening stock of Material A is 142 metres and 81 cu. ft of Material B. He intends to increase this during April, so that there is sufficient raw materials to produce 50 units of each item of equipment.

14.1   Budgeted sales for the period were

    A 71,440
    B 71,490
    C 72,360
    D 72,490

14.2   The number of FAX's produced during the month of April was

    A 203
    B 207
    C 209
    D 219

14.3   The amount of material A used during the month was

    A 2,000 metres
    B 2,144 metres
    C 2,220 metres
    D 2,274 metres

14.4   The cost of labour for the month was

    A £16,960
    B £17,368
    C £18,415
    D £19,314

14.5 Materials A purchased during April were

A £27,288
B £32,184
C £34,162
D £35,586

14.6 The gross profit for the period was

A £19,200
B £19,300
C £19,600
D £19,700

14.7 When preparing a production budget the quantity produced equals

A Sales + opening stock + closing stock
B Sales + opening stock − closing stock
C Sales − opening stock + closing stock
D Sales − opening stock − closing stock

14.8 The principal budget factor is

A The highest value item of cost
B A factor common to all budget centres
C The limiting factor
D A factor known by the budget centre manager

14.9 Which is the last thing to go in the master budget?

A Sales budget
B Cash budget
C Budgeted profit and loss
D Budgeted balance sheet

14.10 The following extract is taken from the production cost budget of NYS Ltd.

Production (units)   4,000   6,000
Production cost (£) 11,100   12,900

The budget cost allowance for an activity level of 8,000 units is

A £7,200
B £14,700
C £17,200
D £22,200

✅ **Multiple choice solutions**

14.1 **B**

Budgeted sales

BAX (290 × £120)	£34,800
DAX (120 × £208)	£24,960
FAX (230 × £51)	£11,730
	£71,490

14.2 **C**

Production of faxes

Sales	230
Closing stock	69 (30%)
	299
Opening stock	90 (given)
Production	209

14.3 **D**

Material used is based on production

	Metres
BAX (314 × 4)	1,256
DAX (120 × 5)	600
FAX (209 × 2)	418
	2,274

14.4 **B**

Labour C		*Labour D*	
(314 × 3)	942	(314 × 2)	628
(120 × 5)	600	(120 × 8)	960
(209 × 2)	418		–
	1,960		1,588

So, 1,960 × 4 + 1,588 × 6
= 7,840 + 9,528
= 17,368

14.5 **B**

Materials used	2,274

See Question 15.3 for workings to get the materials used figure

Closing stock 50 × (4 + 5 + 2)	
Enough to produce 50 units of each	550
	2,824
Opening stock (given)	(142)
	2,682

Therefore, 2,682 × £12 = £32,184.

14.6   **D**

Unit cost

	BAX	DAX	FAX
Material A	48	60	24
Material B	14	21	7
Labour C	12	20	8
Labour D	12	48	–
	86	149	39

BAX $(290 \times (120 - 86))$	9,860
DAX $(120 \times (208 - 149))$	7,080
FAX $(230 \times (51 - 39))$	2,760
	19,700

14.7   **C**

Production budget

Sales − opening stock + closing stock.

14.8   **C**

The principal budget factor is the limiting factor.

14.9   **D**

The last thing to go in the master budget is the budgeted balance sheet.

14.10   **B**

Production (units)	4,000	6,000
Production cost	11,100	12,900

Increase in units	2,000
Increase in cost	£1,800

6,000 – 8,000 increase in units 2,000

Increase in costs £1,800 to £14,700.

Cash Budgets

15

? Concepts and definitions questions

15.1   What is a cash budget?

15.2   What are the objectives of a cash budget?

15.3   What are the six stages in the preparation of a cash budget?

 (i)
 (ii)
(iii)
(iv)
 (v)
(vi)

15.4   The budgeted sales for a company during the first three months of 2005 are as follows:

	January £	February £	March £
Sales	500	600	800

All sales are on credit, and debtors tend to pay as follows:

	%
In month of sale	10
In month after sale	40
Two months after sale	45

Bad debt is 5% of sales. How much cash is collected in March?

Questions 15.5–15.7 are based on the following data:

	January	February	March
Opening stock (units)	100	150	120
Closing stock (units)	150	120	180
Sales (units)	400	450	420

The cost of stock is £5 per unit and 50% of purchases are paid in cash and 50% are paid on credit, two months after the purchase.

15.5   Calculate the production in units for February.

15.6   How many units were purchased over the three-month period?

15.7   How much was paid to suppliers during the month of March?

15.8   What is a spreadsheet?

15.9   State three things which are stored in a spreadsheet.

15.10   What is "what if" analysis?

☑ Concepts and definitions solutions

15.1   A cash budget is a detailed budget of cash inflows and outflows covering both revenue and capital items.

15.2   Objectives of a cash budget

The objectives of a cash budget are to anticipate any shortages/surpluses and to provide management in short- and medium-term cash planning and longer-term finance for the organisation.

15.3   Stages in a cash budget

   (i)   Forecast sales
   (ii)   Forecast time lag into converting debtors to cash
   (iii) Determine stock levels, therefore purchasing requirements
   (iv)   Forecast time lag on paying suppliers
   (v)   Incorporate other cash payments and receipts
   (vi)   Collate all this cash flow information to determine the net cash flows.

15.4   Cash collected in March

	£
March sales 10% of 800	80
Feb sales 40% of 600	240
Jan sales 45% of 500	225
	545

15.5   Production in February (units)

Sales	450
Opening stock	(150)
Closing stock	120
Production in units	420

16.6   3 months purchases

Production in January

Sales	400
Opening stock	(100)
Closing stock	150
	450

Production in February (see Question 16.5) 420 units

Production in March

Sales	420
Opening stock	(120)
Closing stock	180
	480 units

So, 450 + 420 + 480 = 1,350 units

15.7   Amount paid to suppliers in March

50% of 480 + 50% of 450
= 240 + 225
= £465

15.8   A spreadsheet is a computer package which stores data in a matrix format where the intersection of each row and column is referred to a cell.

15.9   Cell storage

Each cell within a spreadsheet can be used to store

(i)   A label
(ii)   A value
(iii) A formula.

15.10   "What if" analysis

Final budgets are dependent on the values entered for sales units and the like. Alterations will be made before the final budget is drawn up. The use of a spreadsheet allows these changes to be made accurately and quickly using formula. Such an exercise is known as "what if" analysis.

❓ Multiple choice questions

15.1   Of the four costs shown below, which one would not be included in the cash budget of a greengrocer?

   A   Petrol for the van
   B   Depreciation of the van
   C   Shop assistants wages
   D   Payments made to suppliers

15.2   The budgeted sales for an organisation are as follows:

	January	February	March	April
Sales	600	800	400	500

These are all credit sales and debtors tend to pay in the following pattern:
15% in month of sale
35% in month after sale
42% two months after sale
Bad debts 8% of sales

How much cash would the firm expect to collect in March?

   A   540
   B   551
   C   592
   D   600

15.3   A sole trader is preparing a cash budget for January. His credit sales are

	October	£80,000
Actual	November	£60,000
	December	£100,000

Estimated January £50,000.

His recent debt collection experience is

	%
Current month's sales	20
Prior month's sales	60
Sales two months prior	10
Cash discounts taken	5
Bad debts	5

How much may he expect to collect in January?

   A   £70,000
   B   £73,000
   C   £76,000
   D   £79,000

15.4 A partnership are preparing their cash budget for September with the following credit sales:

June	42,460
July	45,640
August	47,980
September	49,480

Recent experience suggests that 60% pay in the month after sale, 25% in month 2, 12% in month 3 with 3% bad debt.

Customers paying in the month after sale are entitled to a 2% discount.

How much cash would be collected from credit sales in September?

A £44,717
B £45,725
C £46,372
D £47,639

State that answer should be to the nearest £.

Questions 16.5–16.7 are based on the following budgeted information:

	October	November	December
Opening stock (units)	100	120	150
Closing stock (units)	120	150	130
Sales (units)	500	450	520

The cost of stock is £10 per unit with 40% of purchases for cash, 30% paid in the month after purchase and 30% paid two months after purchase.

15.5 The number of units produced in November was

A 440
B 480
C 520
D 560

15.6 The amount of purchases in October were

A £4,400
B £4,800
C £5,200
D £5,600

15.7 The amount paid to suppliers in December was

A £5,000
B £6,000
C £7,000
D £8,000

15.8   A master budget compromises

    A   The budgeted profit and loss account
    B   The budgeted cash flow, budgeted profit and loss account and budgeted balance sheet
    C   The budgeted cash flow
    D   The capital expenditure budget

15.9   A company is currently preparing its cash budget for the year to 31st March 2005. The sales budget is as follows:

	£
March	60,000
April	70,000
May	55,000
June	65,000

40% of its sales are expected to be for cash. Of its credit sales, 70% are expected to pay in the month after sale and take a 2% discount. 27% are expected to pay in the second month after the sale, and the remaining 3% are expected to be bad debts.

The value of sales receipts to be shown in the cash budget for May 2005 is

    A   58,491
    B   59,546
    C   60,532
    D   61,475

15.10   Purchases are budgeted to be

	£
January	56,000
February	72,000
March	68,000
April	74,000

The company pays invoices in the month following receipt. In the master budgets for the period ended 30th April the total purchases shown in the cash budget will

    A   Be higher than the total purchases shown in the profit and loss account.
    B   Be lower than the total purchases shown in the profit and loss account.
    C   Be the same as the total purchases shown in the profit and loss account.
    D   Be the same as the trade creditors shown in the balance sheet.

☑ Multiple choice solutions

15.1 **B**

Petrol, wages and payments made to suppliers could all appear on a cash budget. Odd one out is depreciation, where no cash changes hands.

15.2 **C**

	£
March sales (15% × 400)	60
February sales (35% × 800)	280
January sales (42% × 600)	252
	592

15.3 **C**

Cash in January

	£
Jan sales (20% × 50,000)	10,000
Dec sales (60% × 100,000)	60,000
Nov sales (10% × 60,000)	6,000
	76,000

15.4 **A**

Cash collected in September

	£
August (47,980 × 98% × 60%)	28,212.24
July (45,640 × 25%)	11,410
June (42,460 × 12%)	5,095.20
	44,717.24

15.5 **B**

Production in November

Sales	450
Opening stock	(120)
Closing stock	150
	480

15.6 **C**

Purchases in October

Sales	500
Opening stock	(100)
Closing stock	120
Production	520

So, 520 × £10 = £5,200.

15.7   **A**

Payment to suppliers (December)

	£
December purchases (40% × 500 × £10)	2,000
November purchases (30% × 480 × £10)	1,440
October purchases (30% × 520 × £10)	1,560
	5,000

15.8   **B**

A master budget comprises the budgeted cash flow, budgeted profit and loss account and budgeted balance sheet.

15.9   **C**

Cash received in May

	£
May sales (40% × 55,000)	22,000
April sales (60% × 70% × 98% × 70,000)	28,812
March sales (60% × 27% × 60,000)	9,720
	60,532

15.10   **B**

Cash payments shown in cash budget are

January	£56,000
February	£77,000
March	£68,000
	£201,000

Purchases shown in the profit and loss account:

February	£77,000
March	£68,000
April	£74,000
	£219,000

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Flexible Budgets **16**

? Concepts and definitions questions

16.1   What is a flexible budget?

16.2   State two advantages and two disadvantages of a flexible budget.

Advantages

 (i)
(ii)

Disadvantages

 (i)
(ii)

16.3   What is a volume variance?

16.4   What is an expenditure variance?

16.5   What is a flexed budget?

✅ Concepts and definitions solutions

16.1 A flexible budget is a budget which, by recognising different cost behaviour patterns, is designed to change as volume of activity changes.

16.2 *Advantages*

(i) Fixed budgets make no distinction between fixed and variable costs.
(ii) Fixed budgets take no account of production shortfall.

Disadvantages

(i) Flexible budgets are more expensive to operate.
(ii) In many businesses, most costs are fixed over budget period especially service industries.

16.3 Volume variance

A volume variance is the difference between planned level of activity and actual level of activity.

16.4 Expenditure variance

An expenditure variance is the difference between planned level of expenditure and actual level of expenditure.

16.5 Flexed budget

An original budget is set at the beginning of the period based on estimated production. This is, then, flexed to correspond with the level of activity.

Consider the following example.

A company manufactures a single product but activity levels vary widely from month to month. The budgeted figures are based on an average activity level of 10,000 units of production each month.

The actual figures for last month are also shown:

	Budget	*Actual*
Direct labour	10,000	9,400
Materials	5,000	4,800
Variable overhead	5,000	4,300
Depreciation	10,000	10,000
Fixed overhead	5,000	5,200
	35,000	33,700
Production	10,000	9,500

	Flexed	*Actual*	*Variance*
Production	9,500	9,500	
Direct labour	9,500	9,400	100 (F)
Materials	4,750	4,800	50 (A)
Variable overhead	4,750	4,300	450 (F)
Depreciation	10,000	10,000	–
Fixed overhead	5,000	5,200	200 (A)
	34,000	33,700	300 (F)

？ **Multiple choice questions**

16.1   Actual output is   162,500 units
        Actual fixed costs   £87,000
        Actual expenditure   £300,000
        Over budget by   £18,000

The budgeted variable cost per unit is

A   80p
B   £1.00
C   £1.20
D   £1.31

16.2   The budgeted variable cost per unit was £2.75. When output was 18,000 units, total expenditure was £98,000. Fixed overheads were £11,000 over budget, variable costs were the same as budget. The amount budgeted for fixed cost was

A   £30,000
B   £34,250
C   £36,750
D   £37,500

Question 16.3–16.5 are based on the following data:

	Budget	Actual
Production	20,000 units	17,600 units
Direct labour	£20,000	£19,540
Variable overhead	£4,200	£3,660
Depreciation	£10,000	£10,000

16.3   The direct labour variance was

A   17,600 (A)
B   19,540 (A)
C   1,940 (A)
D   1,940 (F)

16.4   The variable overhead variance was

A   3,960 (F)
B   3,660 (F)
C   72 (F)
D   36 (F)

16.5   If volume variance is 5,400F and expenditure variance is, 400A, the total variance is

A   3000F
B   3000A
C   7800F
D   7800A

ANSWER

$$
\begin{array}{r}
5400 \\
-2400 \\
\hline
3000F, \text{ therefore the answer is A}
\end{array}
$$

16.6 Variable costs are conventionally deemed to be

    A   Constant per unit of output
    B   Vary per unit of output as production volume changes
    C   Constant in total when production volume changes
    D   Vary in total, from period-to-period when production is constant

16.7 A flexible budget is

    A   A budget of variable production costs only.
    B   A budget which is updated with actual costs and revenues as they occur during the budget period.
    C   A budget which shows the costs and revenues at different levels of activity.
    D   A budget which is prepared for a period of six months and reviewed monthly. Following such a review, a further one month's budget is prepared.

16.8 Which of the following is a criticism of fixed budget?

    A   They make no distinction between fixed and variable costs.
    B   They provide a formal planning framework that ensures planning does take place.
    C   It co-ordinates the various separate aspects of the business by providing a master plan.
    D   It provides a framework of reference within which later operating decisions can be taken.

16.9 In January a company produced 1,200 units at a cost of £9,800.

In February they produced 1,000 units at a cost of £8,700.

If March production is expected to be 1,250 units, what should be the budgeted cost?

    A   £10,000
    B   £10,025
    C   £10,075
    D   £11,025

16.10 The difference between the flexed budget and the actual results is known as:

    A   Volume variance
    B   Expenditure variance
    C   Price variance
    D   Capacity variance

☑ **Multiple choice solutions**

16.1 **C**

Budgeted expenditure £282,000
Less: Fixed costs   £87,000
Total variable costs   £195,000

$$\text{Variable cost per unit} = \frac{£195,000}{£162,500}$$
$$= £1.20$$

16.2 **D**

	£
Actual expenditure	98,000
Less: Fixed cost over budget	11,000
Standard expenditure for 18,000	87,000
Less: Variable cost (18,000 × £2.75)	49,500
Budgeted fixed cost	37,500

16.3 **C**

Standard cost of direct labour	£1
17,600 units should have cost	£17,600
17,600 units did cost	£19,540
Direct labour variance is	1,940 (A)

16.4 **D**

Variable overhead should have cost	3,696

$$\left(\frac{4,200}{20,000} \times 17,600 \right)$$

Actual variable overhead	3,660
Variable overhead variance	36 (F)

16.5 **A**

Variable costs are conventionally deemed to be constant per unit of output.

16.6 **C**

A flexible budget is one which shows the costs and revenues at different levels of activity.

16.7 **A**

A criticism of fixed budgeting is that they make no distinction between fixed and variable costs.

16.8 **C**

Production units	1,200	1,000
Cost	£9,800	£8,700

Difference per 200	£1,100
Difference per 50	£275

So £9,800 + 275 = £10,075.

16.9 **B**

The difference between the flexed budget and the actual results is known as the expenditure variance.

Mock Assessment

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Mock Assessment 1

Certificate in Business Accounting
Fundamentals of Management Accounting

You are allowed two hours to complete this assessment.

The assessment contains 50 questions.

All questions are compulsory.

Do not turn the page until you are ready to attempt the assessment under timed conditions.

Mock Assessment Questions

❓ Question 1

Which ONE of the following would be classified as direct labour?

- ☐ Personnel manager in a company servicing cars.
- ☐ Bricklayer in a construction company.
- ☐ General manager in a DIY shop.
- ☐ Maintenance manager in a company producing cameras.

❓ Question 2

The principal budget factor is the

- ☐ factor which limits the activities of the organisation and is often the starting point in budget preparation.
- ☐ budgeted revenue expected in a forthcoming period.
- ☐ main budget into which all subsidiary budgets are consolidated.
- ☐ overestimation of revenue budgets and underestimation of cost budgets, which operates as a safety factor against risk.

❓ Question 3

R Ltd absorbs overheads based on units produced. In one period 110,000 units were produced and the actual overheads were £500,000. Overheads were £50,000 over-absorbed in the period.

The overhead absorption rate was £[   ] per unit.

❓ Question 4

X Ltd operates an integrated cost accounting system. The Work-in-Progress Account at the end of the period showed the following information:

Work-in-Progress Account

	£		£
Stores ledger a/c	100,000	?	200,000
Wage control a/c	75,000		
Factory overhead a/c	50,000	Balance c/d	25,000
	225,000		225,000

The £200,000 credit entry represents the value of the transfer to the

- ☐ Cost of sales account.
- ☐ Material control account.
- ☐ Sales account.
- ☐ Finished goods stock account.

? **Question 5**

X Ltd absorbs overheads on the basis of machine hours. Details of budgeted and actual figures are as follows:

	Budget	Actual
Overheads	£1,250,000	£1,005,000
Machine hours	250,000 hours	220,000 hours

(a) Overheads for the period were:

under-absorbed ☐
over-absorbed ☐

(b) The value of the under/over absorption for the period was £☐.

? **Question 6**

In an integrated bookkeeping system, when the actual production overheads exceed the absorbed production overheads, the accounting entries to close off the production overhead account at the end of the period would be:

	Debit	Credit	No entry in this account
Production overhead account	☐	☐	☐
Work in progress account	☐	☐	☐
Profit and loss account	☐	☐	☐

? **Question 7**

A retailer uses a Last In First Out (LIFO) stock valuation system. Movements of item M for February are as follows.

	Units	£ per unit
1st February Opening stock balance	230	7.80
3rd February Receipts	430	7.95
8th February Issues	370	
14th February Issues	110	
22nd February Receipts	400	8.01

No other movements of item M occurred during the month.

(a) The value of the closing stock of item M at the end of February is £☐

(b) All units of item M were sold for £14 each. The gross profit achieved on item M during February was £☐

❓ Question 8

A Limited has completed the initial allocation and apportionment of its overhead costs to cost centres as follows.

Cost centre	Initial allocation
	£000
Machining	190
Finishing	175
Stores	30
Maintenance	25
	420

The stores and maintenance costs must now be reapportioned taking account of the service they provide to each other as follows.

	Machining	Finishing	Stores	Maintenance
Stores to be apportioned	60%	30%	–	10%
Maintenance to be apportioned	75%	20%	5%	

After the apportionment of the service department costs, the total overhead cost of the production departments will be (*to the nearest £000*):

Machining   £ ☐
Finishing   £ ☐

❓ Question 9

The budgeted contribution for R Limited last month was £32,000. The following variances were reported.

Variance	£	
Sales volume contribution	800	adverse
Material price	880	adverse
Material usage	822	favourable
Labour efficiency	129	favourable
Variable overhead efficiency	89	favourable

No other variances were reported for the month.
The actual contribution earned by R Limited last month was £ ☐

❓ Question 10

The following scattergraph has been prepared for the costs incurred by an organisation that delivers hot meals to the elderly in their homes.
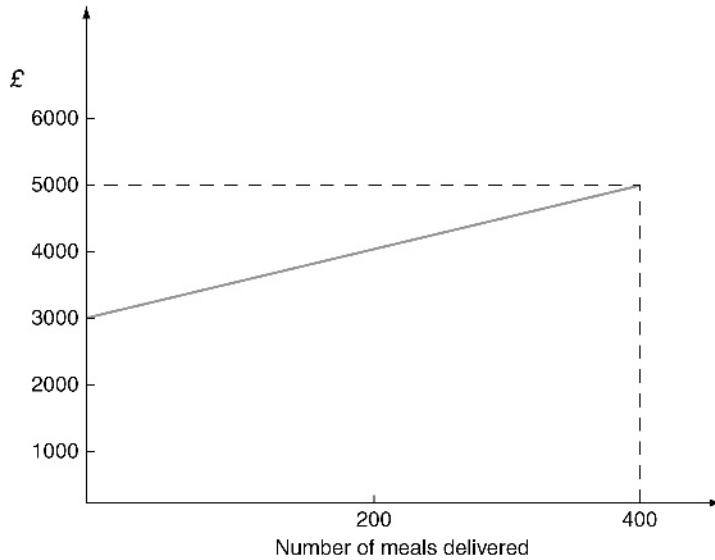
Based on the scattergraph:
(a) the period fixed cost is £☐
(b) the variable cost per meal delivered is £☐

❓ Question 11

A company operates a differential piece-rate system and the following weekly rates have been set:

1–500 units	£0.20 per unit in this band
501–600 units	£0.25 per unit in this band
601 units and above	£0.55 per unit in this band

Details relating to employee A for the latest week are shown below:

Employee A
Actual output achieved   800 units
Actual hours worked   45

There is a guaranteed minimum wage of £5 per hour for a 40-hour week paid to all employees.

The amount payable (to the nearest £) to employee A is £☐.

❓ Question 12

Overtime premium is

☐   the additional amount paid for hours worked in excess of the basic working week.
☐   the additional amount paid over and above the normal hourly rate for hours worked in excess of the basic working week.

☐   the additional amount paid over and above the overtime rate for hours worked in excess of the basic working week.

☐   the overtime rate.

The following information is required for Questions 13 and 14

X Ltd has two production departments, Assembly and Finishing, and one service department, Stores.

Stores provide the following service to the production departments: 60% to Assembly and 40% to Finishing.

The budgeted information for the year is as follows:

Budgeted production overheads:

Assembly	£100,000
Finishing	£150,000
Stores	£50,000
Budgeted output	100,000 units

❓ Question 13

The budgeted production overhead absorption rate for the Assembly Department will be £☐ per unit.

❓ Question 14

At the end of the year, the total of all of the production overheads debited to the Finishing Department Production Overhead Control Account was £130,000, and the actual output achieved was 100,000 units.

(a) The overheads for the Finishing Department were:

under-absorbed ☐
over-absorbed ☐

(b) The value of the under/over absorption was £☐.

❓ Question 15

R Ltd has been asked to quote for a job. The company aims to make a profit margin of 20% on sales. The estimated total variable production cost for the job is £125.

Fixed production overheads for the company are budgeted to be £250,000 and are recovered on the basis of labour hours. There are 12,500 budgeted labour hours and this job is expected to take 3 labour hours.

Other costs in relation to selling, distribution and administration are recovered at the rate of £15 per job.

The company quote for the job should be £☐.

[?] **Question 16**

Which of the following would NOT be included in a cash budget? Tick all that would NOT be included.

- ☐ Depreciation
- ☐ Provisions for doubtful debts
- ☐ Wages and salaries

The following information is required for Questions 17 and 18

X Ltd is preparing its budgets for the forthcoming year.
The estimated sales for the first four months of the forthcoming year are as follows:

Month 1	6,000 units
Month 2	7,000 units
Month 3	5,500 units
Month 4	6,000 units

40% of each month's sales units are to be produced in the month of sale and the balance is to be produced in the previous month.

50% of the direct materials required for each month's production will be purchased in the previous month and the balance in the month of production.

The direct material cost is budgeted to be £5 per unit.

[?] **Question 17**

The production budget for Month 1 will be ☐ units.

[?] **Question 18**

The material cost budget for Month 2 will be £ ☐.

[?] **Question 19**

When calculating the material purchases budget, the quantity to be purchased equals

- ☐ material usage + materials closing stock − materials opening stock
- ☐ material usage − materials closing stock + materials opening stock
- ☐ material usage − materials closing stock − materials opening stock
- ☐ material usage + materials closing stock + materials opening stock

[?] **Question 20**

The following extract is taken from the overhead budget of X Ltd:

| Budgeted activity	50%	75%
Budgeted overhead	£100,000	£112,500

The overhead budget for an activity level of 80% would be £ ☐.

Question 21

Which of the following would be included in the cash budget, but would not be included in the budgeted profit and loss account? Tick all that are correct.

☐ Repayment of a bank loan.
☐ Proceeds from the sale of a fixed asset.
☐ Bad debts write off.

Question 22

Level of activity
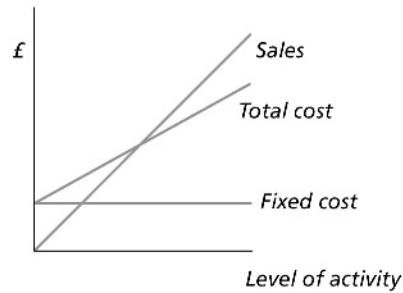
This graph is known as a

☐ semi-variable cost chart.
☐ conventional breakeven chart.
☐ contribution breakeven chart.
☐ profit volume chart.

Question 23

The following details have been extracted from the creditors' records of X Limited:

Invoices paid in the month of purchase	25%
Invoices paid in the first month after purchase	70%
Invoices paid in the second month after purchase	5%

Purchases for July to September are budgeted as follows:

July	£250,000
August	£300,000
September	£280,000

For suppliers paid in the month of purchase, a settlement discount of 5% is received. The amount budgeted to be paid to suppliers in September is £ ☐ .

❓ Question 24
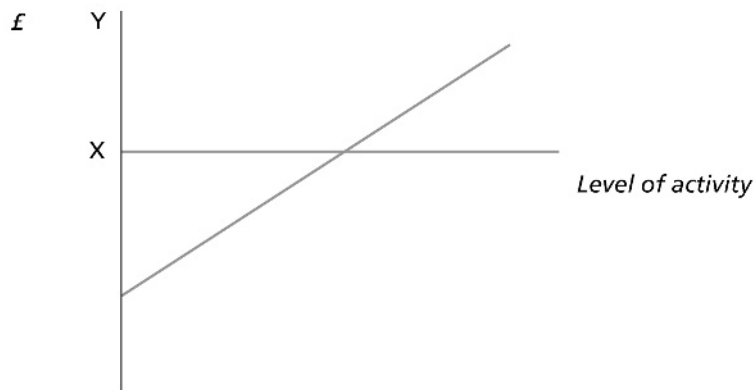
The difference in the values (£) between point X and point Y on the profit volume chart shown above represents:

- ☐ contribution
- ☐ profit
- ☐ breakeven
- ☐ loss

❓ Question 25
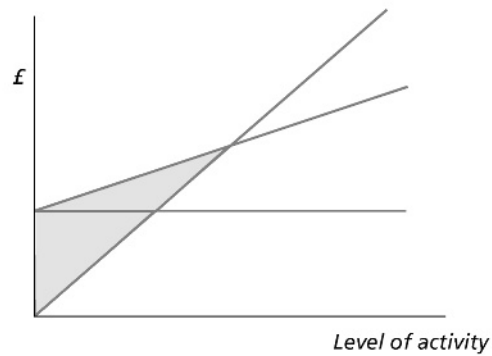
The shaded area on the breakeven chart shown above represents:

- ☐ loss
- ☐ fixed cost
- ☐ variable cost
- ☐ profit

Question 26

In a standard cost bookkeeping system, when the actual material usage has been greater than the standard material usage, the entries to record this is in the accounts are:

	Debit	Credit	No entry in this account
Material usage variance account	☐	☐	☐
Raw material control account	☐	☐	☐
Work in progress account	☐	☐	☐

Question 27

R Ltd makes one product, which passes through a single process.
Details of the process for period 1 were as follows:

	£
Material cost – 20,000 kg	26,000
Labour cost	12,000
Production overhead cost	5,700
Output	18,800 kg
Normal losses	5% of input

There was no work-in-progress at the beginning or end of the period. Process losses have no value.

The cost of the abnormal loss (to the nearest £) is £☐.

The following information is required for Questions 28–35

X Ltd operates a standard costing system. The following budgeted and standard cost information is available:

Budgeted production and sales	10,000 units

	£ per unit
Selling price	250
Direct material cost – 3 kg × £10	30
Direct labour cost – 5 hours × £8	40
Variable production overheads – 5 hours × £4	20

Actual results for the period were as follows:

Production and sales	11,500 units
	£
Sales value	2,817,500
Direct material – 36,000 kg	342,000
Direct labour – 52,000 hours	468,000
Variable production overheads	195,000

For all calculated variances, tick the correct box to indicate whether the variance is adverse or favourable.

? Question 28

The direct material price variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 29

The direct material usage variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 30

The direct labour rate variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 31

The direct labour efficiency variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 32

The variable production overhead expenditure variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 33

The variable production overhead efficiency variance is £ ☐

    adverse   ☐
    favourable ☐

? Question 34

The sales volume contribution variance is £ ☐

    adverse   ☐
    favourable ☐

Question 35

The sales price variance is £⬚

      adverse   ☐
      favourable   ☐

Question 36

X Ltd uses the FIFO method to charge material issue costs to production. Opening stock of material M at the beginning of April was 270 units valued at £4 per unit.

Movements of material M during April were as follows.

  4 April   Received 30 units at £4.10 per unit
  9 April   Issued 210 units
14 April   Issued 80 units
22 April   Received 90 units at £4.20 per unit
24 April   Issued 40 units

  (a) The total value of the issues to production during April was £⬚.
  (b) The value of the closing stock at the end of April was £⬚.

Question 37

X Ltd manufactures a product called the 'ZT'. The budget for next year was:

Annual sales	10,000 units
	£ per unit
Selling price	20
Variable cost	14
Fixed costs	3
Profit	3

If the selling price of the ZT were reduced by 10 per cent, the sales revenue that would be needed to generate the original budgeted profit would be £⬚.

Question 38

A company is faced with a shortage of skilled labour next period.

When determining the production plan that will maximise the company's profit next period, the company's products should be ranked according to their:

☐   profit per hour of skilled labour
☐   profit per unit of product sold
☐   contribution per hour of skilled labour
☐   contribution per unit of product sold

⟨?⟩ **Question 39**

Which of the following would contribute towards a favourable sales price variance (tick all that apply)?

(a) The standard sales price per unit was set too high ☐ .
(b) Price competition in the market was not as fierce as expected ☐ .
(c) Sales volume was higher than budgeted and therefore sales revenue was higher than budgeted ☐ .

⟨?⟩ **Question 40**

R Ltd has the following year-end information regarding one of its long-term contracts:

	£
Revenue credited to income statement	2,500,000
Profit recognised	750,000
Cash received	1,875,000
Costs to date	2,200,000
Future costs	220,000

(a) The cost charged to the income statement in respect of this contract was £ ☐ .
(b) The value of the contract debtor is £ ☐ .

⟨?⟩ **Question 41**

The following data relate to a process for the latest period.

Opening work in progress	300 kg valued as follows
	Input material £1,000
	Conversion cost £200
Input during period	8,000 kg at a cost of £29,475
Conversion costs	£11,977
Output	7,000 kg
Closing work in progress	400 kg

Closing work in progress is complete as to input materials and 70 per cent complete as to conversion costs.

Losses are expected to be 10 per cent of input during the period and they occur at the end of the process. Losses have a scrap value of £2 per kg.

The value of the completed output (to the nearest £) is £ ☐

⟨?⟩ **Question 42**

Which of the following stock valuation methods results in charges to cost of sales which are close to the economic cost?

First In, First Out (FIFO) ☐
Last In, First Out (LIFO) ☐
Average Cost (AVCO) ☐

Data for questions 43 and 44

A company makes a single product T and budgets to produce and sell 7,200 units each period. Cost and revenue data for the product at this level of activity are as follows.

	$ per unit
Selling price	53
Direct material cost	24
Direct labour cost	8
Other variable cost	3
Fixed cost	7
Profit	11

Question 43

The contribution to sales ratio (P/V ratio) of product T (to the nearest whole number) is ☐ %.

Question 44

The margin of safety of product T (to the nearest whole number) is ☐ % of budgeted sales volume.

Data for questions 45 and 46

The total figures from TY Division's budgetary control report are as follows.

	Fixed budget	Flexed budget allowances	Actual results
	$	$	$
Total sales revenue	520,000	447,000	466,500
Total expenditure	389,000	348,000	329,400
Total profit	131,000	99,000	137,100

Question 45

(a) The sales price variance for the period is $☐ **adverse/favourable**
(b) The sales volume variance for the period is $☐ **adverse/favourable**

Question 46

(a) The total expenditure variance for the period is $☐ **adverse/favourable**
(b) The total budget variance for the period is $☐ **adverse/favourable**

? **Question 47**

In an integrated bookkeeping system, the correct entries to record the depreciation of production machinery are:

	Debit	Credit	No entry in this account
Depreciation of production machinery	☐	☐	☐
Work in progress account	☐	☐	☐
Production overhead control account	☐	☐	☐

? **Question 48**

In an integrated bookkeeping system, the correct entries to record the issue of indirect materials for production purposes are:

	Debit	Credit	No entry in this account
Materials control account	☐	☐	☐
Work in progress account	☐	☐	☐
Production overhead control account	☐	☐	☐

? **Question 49**

H Limited budgets to produce and sell 4,000 units of product H next year. The amount of capital investment required to support product H will be £290,000 and H Limited requires a rate of return of 14 per cent on all capital invested.

The full cost per unit of product H is £45.90.

To the nearest penny, the selling price per unit of product H that will achieve the specified return on investment is £[_____].

? **Question 50**

The Drop In Café sells specialist coffees to customers to drink on the premises or to take away.

The proprietors have established that the cost of ingredients is a wholly variable cost in relation to the number of cups of coffee sold whereas staff costs are semi-variable and rent costs are fixed.

Within the relevant range, as the number of cups of coffee sold increases (delete as appropriate):

(a) The ingredients cost per cup sold will increase/decrease/stay the same.
(b) The staff cost per cup sold will increase/decrease/stay the same.
(c) The rent cost per cup sold will increase/decrease/stay the same.

First Mock Assessment – Solutions

✅ Solution 1

Bricklayer in a construction company.

The bricklayer's wages can be identified with a specific cost unit therefore this is a direct cost. The wages paid to the other three people cannot be identified with specific cost units. Therefore they would be indirect costs.

✅ Solution 2

The principal budget factor is the factor which limits the activities of the organisation and is often the starting point in budget preparation.

✅ Solution 3

The overhead absorption rate was £5 per unit.

Workings:

	£
Actual overheads	500,000
Over absorption	50,000
Overhead absorbed	550,000

Overhead absorption rate = £550,000/110,000 units = £5.

✅ Solution 4

Finished goods stock account.

✅ Solution 5

Overheads for the period were *over-absorbed by £95,000*.

Workings:
Overhead absorption rate = £1,250,000/250,000 = £5 per hour

	£
Absorbed overhead = 220,000 hours × £5	1,100,000
Actual overhead incurred	1,005,000
Over-absorbed overhead	95,000

✅ Solution 6

	Debit	Credit	No entry in this account
Production overhead account		✔	
Work in progress account			✔
Profit and loss account	✔		

✅ Solution 7

(a) The value of the closing stock of item M at the end of February is £4,608

(b) All units of item M were sold for £14 each. The gross profit achieved on item M during February was £2,911.50

Workings

| | | Receipts | | | Sales | | | Balance | |
Date	Qty	Price	£	Qty	Price	£	Qty	Price	£
1 Feb							230	7.80	1,794.00
3 Feb	430	7.95	3,418.50				230	7.80	1,794.00
							430	7.95	3,418.50
							660		5,212.50
8 Feb				370	7.95	2,941.50	230	7.80	1,794.00
							60	7.95	477.00
							290		2,271.00
14 Feb				60	7.95	477.00			
				50	7.80	390.00			
				110		867.00	180	7.80	1,404.00
22 Feb	400	8.01	3,204.00				180	7.80	1,404.00
							400	8.01	3,204.00
							580		4,608.00

(b)

	£
Sales revenue (480 units × £14)	6,720.00
Cost of goods sold (2,941.50 + 867.00)	3,808.50
Gross profit	2,911.50

✅ Solution 8

After the apportionment of the service department costs, the total overhead cost of the production departments will be (*to the nearest £000*):

Machining   £230,000
Finishing   £190,000

Workings

| | Machining | Finishing | Stores | Maintenance |
	£000	£000	£000	£000
Apportioned costs	190.00	175.00	30.0	25.0
Stores apportionment	18.00	9.00	(30.0)	3.0
Maintenance apportionment	21.00	5.60	1.4	(28.0)
Stores apportionment	0.84	0.42	(1.4)	0.14
Maintenance apportionment	0.11	0.03	–	(0.14)
Total	229.95	190.05		

✅ Solution 9

The actual contribution earned by R Limited last month was £31,360.

£(32,000 − 800 − 880 + 822 + 129 + 89) = £31,360.

✅ Solution 10

(a) The period fixed cost is £3,000
(b) The variable cost per meal delivered is £5

Workings:

$$\text{Variable cost per meal} = \frac{£5,000 - £3,000}{400 \text{ meals}} = £5$$

✅ Solution 11

The amount payable to employee A is £235.

Workings:

Units	£
500 × 20p	100
100 × 25p	25
200 × 55p	110
800	235

✅ Solution 12

Overtime premium is the additional amount paid over and above the normal hourly rate for hours worked in excess of the basic working week.

✅ Solution 13

The budgeted production overhead absorption rate for the Assembly Department will be £1.30 per unit.

Workings:

	Assembly £
Budgeted overheads	100,000
Reapportioned stores overhead 60% × £50,000	30,000
Total budgeted overhead	130,000
Budgeted output	100,000

$$\text{OAR} = \frac{£130,000}{100,000} = £1.30 \text{ per unit}$$

✅ Solution 14

The overheads for the Finishing Department were *over-absorbed by £40,000.*

Workings:

	Finishing
	£
Budgeted overheads	150,000
Reapportioned stores overhead 40% × £50,000	20,000
Total budgeted overhead	170,000
Budgeted output	100,000

$$\text{OAR} = \frac{£170,000}{100,000}$$

$$= £1.70 \text{ per unit}$$

	£
Absorbed overhead £1.70 × 100,000	170,000
Actual overhead incurred	130,000
Over absorption	40,000

✅ Solution 15

The company quote for the job should be *£250.*

Workings:

	Job quote
	£
Variable production costs	125
Fixed production overheads $\left(\dfrac{£250,000}{12,500} \times 3 \right)$	60
Selling, distribution and administration	15
Total cost	200
Profit margin 20%	50
Quote	250

✅ Solution 16

Depreciation and provisions for doubtful debts are not cash flows and would not be included in a cash budget.

✅ Solution 17

The production budget for month 1 will be *6,600 units.*

Workings:

	Month 1 Units	Month 2 Units	Month 3 Units	Month 4 Units
Sales	6,000	7,000	5,500	6,000
Production				
40% in the month	2,400	2,800	2,200	2,400
60% in the previous month	4,200	3,300	3,600	
Production	6,600	6,100	5,800	

✅ Solution 18

The material cost budget for Month 2 will be *£30,500.*

Workings:

Month 2   6,100 units produced @ £5 per unit $= £30,500$.

✅ Solution 19

The quantity to be purchased equals material usage + materials closing stock − materials opening stock.

✅ Solution 20

The overhead budget for an activity level of 80% would be *£115,000.*

Workings:
Using the high/low method

		£	
High	75%	112,500	
Low	50%	100,000	
Change	25%	12,500	− variable cost of 25%
	1%	500	− variable cost of 1%

Substitute into 75% activity	£
Total overhead	112,500
Variable cost element 75 × £500	37,500
Fixed cost element	75,000

Total overhead for 80% activity	
Variable cost element 80 × £500	40,000
Fixed cost element	75,000
Total overhead	115,000

✅ Solution 21

The correct answers are:
- repayment of a bank loan
- proceeds from the sale of a fixed asset.

Both these items result in a cash flow and would therefore be included in the cash budget. However, they would not be included in the profit and loss account. The bad debts write off would be included in the profit and loss account, but not in the cash budget.

✅ Solution 22

The graph is known as a conventional breakeven chart.

✅ Solution 23

The amount budgeted to be paid to suppliers in September is £289,000.

Workings:

	July £	August £	September £
Purchases	250,000	300,000	280,000
25% paid in the month of purchase	62,500	75,000	70,000
5% discount allowed	(3,125)	(3,750)	(3,500)
70% paid in the first month		175,000	210,000
5% paid in the second month			12,500
Budgeted payment			289,000

✅ Solution 24

The difference in the values (£) between point X and point Y on the profit volume chart represents *profit*.

✅ Solution 25

The shaded area on the breakeven chart represents *loss*.

✅ Solution 26

	Debit	Credit	No entry in this account
Material usage variance account	✔		
Raw material control account			✔
Work in progress account		✔	

✅ Solution 27

The cost of the abnormal loss is £460.

Workings:

	£
Direct material cost	26,000
Labour cost	12,000
Production overhead cost	5,700
	43,700

	Kg
Input	20,000
Normal loss	1,000
Expected output	19,000
Actual output	18,800
Abnormal loss	200

Cost per kg = £43,700/19,000 = £2.30
Cost of abnormal loss = £2.30 × 200 kg = £460.

✅ Solution 28

The direct material price variance is £18,000 *favourable*.

Workings:

	£
36,000 kg should cost (× £10)	360,000
but did cost	342,000
Variance	18,000 F

✅ Solution 29

The direct material usage variance is £15,000 *adverse*.

Workings:

11,500 units should use (× 3 kg)	34,500	kg
but did use	36,000	kg
Difference	1,500	kg
× std price per kg	× £10	
Variance	£15,000	A

✅ Solution 30

The direct labour rate variance is £52,000 *adverse*.

Workings:

	£
52,000 hours should cost (× £8)	416,000
but did cost	468,000
Variance	52,000 A

✅ Solution 31

The direct labour efficiency variance is £44,000 *favourable*.

Workings:

11,500 units should take (× 5 hours)	57,500 hours
but did take	52,000 hours
Difference	5,500 hours
× std rate per hour	× £8
Variance	£44,000 F

✅ Solution 32

The variable production overhead expenditure variance is £13,000 *favourable*.

Workings:

	£
52,000 hours should have cost (× £4)	208,000
but did cost	195,000
Variance	13,000 F

✅ Solution 33

The variable production overhead efficiency variance is £22,000 *favourable*.

Workings:

Variance in hours from labour efficiency variance	= 5,500 hours
× standard variable production overhead per hour	× £4
Variance	£22,000 F

✅ Solution 34

The sales volume contribution variance is £240,000 *favourable*.

Workings:

Actual sales volume	11,500	units
Budget sales volume	10,000	units
Variance in units	1,500	favourable
× standard contribution per unit £(250 − 30 − 40 − 20)	× £160	
Sales volume contribution variance	£240,000	favourable

☑ Solution 35

The sales price variance is £57,500 *adverse*.

> *Workings*:

	£
11,500 units should sell for (× £250)	2,875,000
But did sell for	2,817,500
Sales price variance	57,500 adverse

☑ Solution 36

(a) The total value of the issues to production during April was £1,329.
(b) The value of the closing stock at the end of April was £252.

> *Workings*:

(a) Issues:	9 April	210 units × £4	£ 840
	14 April	60 units × £4	240
		20 units × £4.10	82
	24 April	10 units × £4.10	41
		30 units × £4.20	126
			1,329

(b) Stock = 60 units × £4.20 = £252

☑ Solution 37

The sales revenue that would be needed to generate the original budgeted profit would be £270,000.

Workings:
Fixed costs are not relevant because they will remain unaltered.
Original budgeted contribution = 10,000 units × £(20 − 14) = £60,000
Revised contribution per unit = £(18 − 14) = £4
Required number of units to achieve same contribution = £60,000/£4 = 15,000 units
Required sales revenue = 15,000 units × £18 revised price = £270,000

☑ Solution 38

When determining the production plan that will maximise the company's profit next period, the company's products should be ranked according to their contribution per hour of skilled labour.

✅ Solution 39

Only reason (b) would contribute to a favourable sales price variance.

Reason (a) would result in an adverse variance. Reason (c) would not necessarily result in any sales price variance because all the units could have been sold at standard price.

✅ Solution 40

(a) The cost charged to the income statement in respect of this contract was £1,750,000.

Workings:

	£
Revenue credited	2,500,000
Profit recognised	750,000
Cost charged	1,750,000

(b) The value of the contract debtor is £625,000.

Workings:

	£
Revenue credited	2,500,000
Less cash received	1,875,000
Debtor balance	625,000

✅ Solution 41

The value of the completed output is £38,500

Workings

				Equivalent kg			
				Input material		Conversion	costs
Input	kg	*Output*	kg				
Opening WIP	300	Finished output	7,000	7,000			7,000
Input	8,000	Normal loss	800	–			–
		Abnormal loss	100	100			100
		Closing WIP	400	400	70%		280
	8,300		8,300	7,500			7,380
		Costs	£	£			£
		Opening WIP	1,200	1,000			200
		Period costs	41,452	29,475			11,977
		Normal loss	(1,600)	(1,600)			–
			41,052	28,875			12,177
		Cost per equivalent kg	5.50	3.85			1.65

The value of the completed output is £5.50 × 7,000 kg = £38,500

☑ Solution 42

The LIFO stock valuation method results in charges to cost of sales which are close to the economic cost.

☑ Solution 43

The contribution to sales ratio (P/V ratio) of product T is 34%.

Workings:
Contribution per unit of product T = $(53 − 24 − 8 − 3) = $18
Contribution to sales ratio = 18/53 = 34%

☑ Solution 44

The margin of safety of product T is 61% of budgeted sales volume.

Workings:
Period fixed costs = 7,200 × $7 = $50,400

$$\text{Breakeven point} = \frac{\$50,400}{\$18} = 2,800 \text{ units}$$

Margin of safety = (7,200 − 2,800) units = 4,400 units
Margin of safety as percentage of budgeted sales = 4,400/7,200 = 61%

☑ Solution 45

(a) The sales price variance is $(466,500 − 447,000) = $19,500 favourable
(b) The sales volume variance is $(99,000 − 131,000) = $32,000 adverse

☑ Solution 46

(a) The total expenditure variance is $(329,400 − 348,000) = $18,600 favourable
(b) The total budget variance is $(137,100 − 131,000) = $6,100 favourable

☑ Solution 47

	Debit	Credit	No entry in this account
Depreciation of production machinery		✔	
Work in progress account			✔
Production overhead control account	✔		

✅ Solution 48

	Debit	Credit	No entry in this account
Materials control account		✔	
Work in progress account			✔
Production overhead control account	✔		

✅ Solution 49

The selling price per unit of product H that will achieve the specified return on investment is £56.05

Workings:

Required return from capital invested to support product H = £290,000 × 14%

= £40,600

Required return per unit of product H sold = £40,600/4,000 = £10.15

Required selling price = £45.90 full cost + £10.15 = £56.05

✅ Solution 50

Within the relevant range, as the number of cups of coffee sold increases:

(a) the ingredients cost per cup sold will stay the same.
(b) the staff cost per cup sold will decrease.
(c) the rent cost per cup sold will decrease.

Mock Assessment 2

Certificate in Business Accounting
Fundamentals of Management Accounting

You are allowed two hours to complete this assessment.

The assessment contains 50 questions.

All questions are compulsory.

Do not turn the page until you are ready to attempt the assessment under timed conditions.

Mock Assessment Questions

❓ Question 1

In an integrated accounting system, the accounting entries to complete the production overhead control account at the end of the period, when the production overheads absorbed exceed the actual production overhead incurred are:

	Debit	*Credit*	*No entry in this account*
Production overhead control account	☐	☐	☐
Work in progress account	☐	☐	☐
Finished goods account	☐	☐	☐
Profit and loss account	☐	☐	☐

❓ Question 2

A company expects to sell h units in the next accounting period, and has prepared the following breakeven chart.
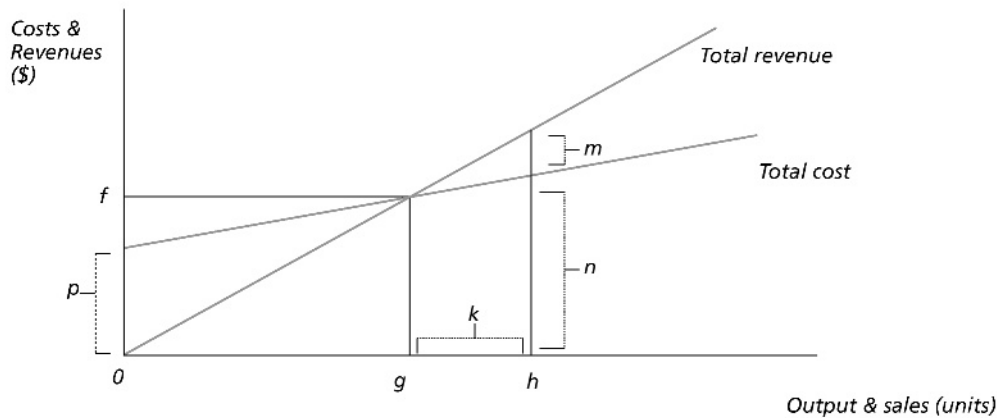
(a) The margin of safety is shown on the diagram by ☐ (insert correct letter).
(b) The effect of an increase in fixed costs, with all other costs and revenues remaining the same, will be

	increase	*decrease*	*stay the same*
m will	☐	☐	☐
k will	☐	☐	☐
f will	☐	☐	☐
p will	☐	☐	☐

❓ Question 3

A company uses the repeated distribution method to reapportion service department costs. The use of this method suggests

☐ the company's overhead rates are based on estimates of cost and activity levels, rather than actual amounts.

☐ there are more service departments than production cost centres.

☐ the company wishes to avoid under- or over-absorption of overheads in its production cost centres.

☐ the service departments carry out work for each other.

? Question 4

The management accountant's report shows that fixed production overheads were over-absorbed in the last accounting period. The combination that is certain to lead to this situation is

Production activity	*and*	*Fixed overhead expenditure*
☐ lower than budget		☐ lower than budget
☐ higher than budget		☐ higher than budget
☐ as budgeted		☐ as budgeted

? Question 5

Which of the following costs would be classified as production overhead cost in a food processing company (tick all that apply)?

☐ The cost of renting the factory building.
☐ The salary of the factory manager.
☐ The depreciation of equipment located in the materials store.
☐ The cost of ingredients.

? Question 6

The normal loss in process 2 is valued at its scrap value. Extracts from the process account and the abnormal gain account for the latest period are shown below.

Process 2			
	£		£
Opening WIP	1,847	Output to finished goods	
Conversion costs	14,555	− 5,100 units	22,695
Input materials	6,490	Normal loss − 100 units	120
Abnormal gain − 220 units		Closing WIP	

Abnormal gain			
	£		£
Profit and loss account	A	Process 2	B

The values to be entered in the abnormal gain account for the period are:

A = £ ☐
B = £ ☐

The following information is required for questions 7 and 8

The incomplete process account relating to period 4 for a company which manufactures paper is shown below:

Process account

	Units	$		Units	$
Material	4,000	16,000	Finished goods	2,750	
Labour		8,125	Normal loss	400	700
Production overhead		3,498	Work in progress	700	

There was no opening work in process (WIP). Closing WIP, consisting of 700 units, was complete as shown:

Materials	100%
Labour	50%
Production overhead	40%

Losses are recognised at the end of the production process and are sold for $1.75 per unit.

? Question 7

Given the outcome of the process, which ONE of the following accounting entries is needed to complete the double entry in the process account for the abnormal loss or gain?

	Debit	*Credit*	*No entry in this account*
Process account	☐	☐	☐
Abnormal Gain account	☐	☐	☐
Abnormal Loss account	☐	☐	☐

? Question 8

The value of the closing WIP was $[＿＿＿].

? Question 9

A machine operator is paid £10.20 per hour and has a normal working week of 35 hours. Overtime is paid at the basic rate plus 50%. If, in week 7, the machine operator worked 42 hours, the overtime premium paid to the operator would be £[＿＿＿].

? Question 10

An engineering firm operates a job costing system. Production overhead is absorbed at the rate of £8.50 per machine hour. In order to allow for non-production overhead costs and profit, a mark up of 60% of prime cost is added to the production cost when preparing price estimates.
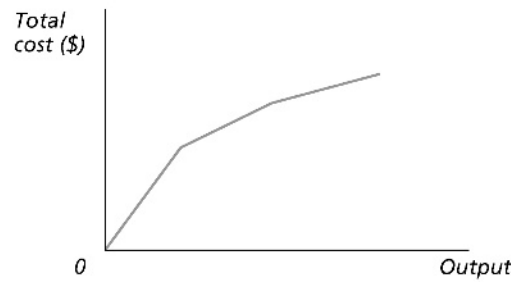
The estimated requirements of job number 808 are as follows:

Direct materials	£10,650
Direct labour	£3,260
Machine hours	140

The estimated price notified to the customer for job number 808 will be £[＿＿＿].

Question 11

The diagram represents the behaviour of a cost item as the level of output changes:

Which ONE of the following situations is depicted by the graph?

☐ Discounts are received on additional purchases of material when certain quantities are purchased.

☐ Employees are paid a guaranteed weekly wage, together with bonuses for higher levels of production.

☐ A licence is purchased from the government which allows unlimited production.

☐ Additional space is rented to cope with the need to increase production.

Question 12

A hospital's records show that the cost of carrying out health checks in the last five accounting periods have been as follows:

Period	Number of patients seen	Total cost £
1	650	17,125
2	940	17,800
3	1,260	18,650
4	990	17,980
5	1,150	18,360

Using the high–low method and ignoring inflation, the estimated cost of carrying out health checks on 850 patients in period 6 is £☐☐☐☐.

Question 13

The principal budget factor for a footwear retailer is

☐ the cost item taking the largest share of total expenditure.

☐ the product line contributing the largest amount to sales revenue.

☐ the product line contributing the largest amount to business profits.

☐ the constraint that is expected to limit the retailer's activities during the budget period.

The following information is required for questions 14 and 15

Extracts from the budget of H Ltd, a retailer of office furniture, for the six months to 31 December show the following information:

	$
Sales	55,800
Purchases	38,000
Closing stock finished goods	7,500
Opening stock finished goods	5,500
Opening debtors	8,500
Opening creditors	6,500

Debtors and creditors are expected to rise by 10 and 5 per cent, respectively, by the end of the budget period.

Question 14

The estimated cash receipts from customers during the budget period are $☐.

Question 15

The profit mark-up, as a percentage of the cost of sales (to the nearest whole number) is ☐%.

Question 16

Which of the following actions are appropriate if a company anticipates a temporary cash shortage (tick all that apply)?

(i) ☐ issue additional shares;
(ii) ☐ request additional bank overdraft facilities;
(iii) ☐ sell machinery currently working at half capacity;
(iv) ☐ postpone the purchase of plant and machinery.

Question 17

A company manufactures three products, X, Y and Z. The sales demand and the standard unit selling prices and costs for the next accounting period, period 1, are estimated as follows:

	X	Y	Z
Maximum demand (000 units)	4.0	5.5	7.0
	£ per unit	£ per unit	£ per unit
Selling price	28	22	30
Variable costs:			
Raw material (£1 per kg)	5	4	6
Direct labour (£12 per hour)	12	9	18

(a) If supplies in period 1 are restricted to 90,000 kg of raw material and 18,000 hours of direct labour, the limiting factor would be

☐ direct labour.
☐ raw material.
☐ neither direct labour nor raw material.

(b) In period 2, the company will have a shortage of raw materials, but no other resources will be restricted. The standard selling prices and costs and the level of demand will remain unchanged.

In what order should the materials be allocated to the products if the company wants to maximise profit?

First: product ☐
Second: product ☐
Third: product ☐

Question 18

A performance standard which assumes efficient levels of operation, but which includes allowances for factors such as waste and machine downtime is known as:

☐ an allowable standard
☐ an attainable standard
☐ an ideal standard
☐ a current standard

The following information is required for questions 19 and 20

W Ltd makes leather purses. It has drawn up the following budget for its next financial period:

Selling price per unit	$11.60
Variable production cost per unit	$3.40
Sales commission	5% of selling price
Fixed production costs	$430,500
Fixed selling and administration costs	$198,150
Sales	90,000 units

Question 19

The margin of safety represents ☐% of budgeted sales.

Question 20

The marketing manager has indicated that an increase in the selling price to $12.25 per unit would not affect the number of units sold, provided that the sales commission is increased to 8 per cent of the selling price.

These changes will cause the breakeven point (to the nearest whole number) to be ☐ units.

? **Question 21**

Over long time periods of several years, supervisory labour costs will tend to behave as:

☐ linear variable costs
☐ step fixed costs
☐ fixed costs
☐ semi-variable costs

? **Question 22**

A firm calculates the material price variance when material is purchased. The accounting entries necessary to record a favourable material price variance in the ledger are:

	Debit	*Credit*	*No entry in this account*
Material control account	☐	☐	☐
Work-in-progress control account	☐	☐	☐
Material price variance account	☐	☐	☐

? **Question 23**

The accounting entries necessary to record an adverse labour efficiency variance in the ledger accounts are:

	Debit	*Credit*	*No entry in this account*
Wages control account	☐	☐	☐
Labour variance account	☐	☐	☐
Work-in-progress control account	☐	☐	☐

? **Question 24**

The following graph shows the wages earned by an employee during a single day:
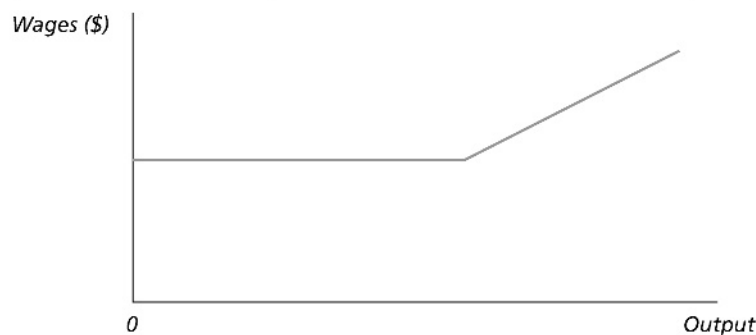
Which ONE of the remuneration systems listed below does the graph represent?

☐ Differential piecework.
☐ A flat rate per hour with a premium for overtime working.
☐ Straight piecework.
☐ Piecework with a guaranteed minimum daily wage.

? Question 25

J Ltd absorbs production overheads on the basis of machine hours. The following budgeted and actual information applied in its last accounting period:

	Budget	Actual
Production overhead	$180,000	$178,080
Machine hours	40,000	38,760

(a) At the end of the period, production overhead will be reported as:

☐ under-absorbed
☐ over-absorbed

(b) The amount of the under/over-absorption will be $ ☐ .

The following data are to be used to answer questions 26 and 27

E Ltd's stock purchases during a recent week were as follows:

Day	Price per unit ($)	Units purchased
1	1.45	55
2	1.60	80
3	1.75	120
4	1.80	75
5	1.90	130

There was no stock at the beginning of the week. 420 units were issued to production during the week. The company updates its stock records after every transaction.

? Question 26

Using a first in, first out (FIFO) method of costing stock issues, the value of closing stock would be $ ☐ .

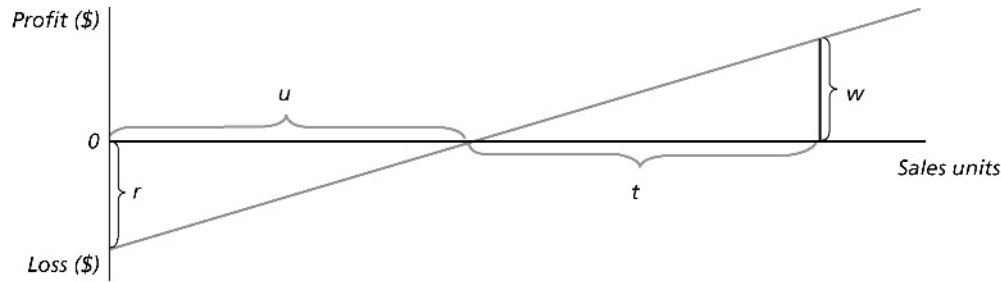## ? Question 27

If E Ltd changes to the weighted average method of stock valuation, the effect on closing stock value and on profit for the week compared with the FIFO method will be:

(a) Closing stock value will be: higher ☐
                                     lower ☐
(b) Gross profit for the week will be: higher ☐
                                     lower ☐

The following data are to be used to answer questions 28 and 29
The diagram shows the profit-volume chart of Z Ltd for its last accounting period. The company made a profit of $w during the period.

❓ Question 28

An increase in the fixed costs per period (assuming the selling price per unit and the variable cost per unit remain unchanged), will cause:

	increase	*decrease*	*remain the same*
r to	☐	☐	☐
w to	☐	☐	☐
t to	☐	☐	☐
u to	☐	☐	☐

❓ Question 29

The following results were achieved in the last accounting period:

$$r = \$50,000 \qquad w = \$16,000 \qquad t = 800 \text{ units} \qquad u = 2,500 \text{ units}$$

The company expects to make and sell an additional 1,400 units in the next accounting period. If variable cost per unit, selling price per unit and total fixed costs remain unchanged, profit will increase by $ ☐ .

❓ Question 30

A manufacturer of cell phones is considering the following actions. Which of these is likely to increase the manufacturer's C/S (contribution/sales) ratio (tick all that apply)?

(i) ☐ taking advantage of quantity discounts for bulk purchases of material;
(ii) ☐ introducing training programmes designed to improve labour efficiency;
(iii) ☐ following the actions of a competitor who has cut prices substantially;
(iv) ☐ reducing exports to countries where there is intense price competition;
(v) ☐ offering retailers a lower price if they display the product more prominently.

❓ Question 31

An advertising agency uses a job costing system to calculate the cost of client contracts. Contract A42 is one of several contracts undertaken in the last accounting period. Costs associated with the contract consist of:

Direct materials	$5,500
Direct expenses	$14,500

Design staff worked 1,020 hours on contract A42, of which 120 hours were overtime. One third of these overtime hours were worked at the request of the client who wanted the contract to be completed quickly. Overtime is paid at a premium of 25 per cent of the basic rate of $24.00 per hour.

The prime cost of contract A42 is $ ☐.

❓ Data for questions 32 and 33

Sales of product G are budgeted as follows.

	Month 1	Month 2	Month 3	Month 4	Month 5
Budgeted sales units	340	420	290	230	210

Company policy is to hold in stock at the end of each month sufficient units of product G to satisfy budgeted sales demand for the forthcoming two months.

❓ Question 32

The budgeted production of product G in month 2 is ☐ units.

❓ Question 33

Each unit of product G uses 2 litres of liquid K. Company policy is to hold in stock at the end of each month sufficient liquid K for the production requirements of the forthcoming month.

The budgeted purchases of liquid K in month 2 are ☐ litres.

❓ Question 34

The following data have been extracted from the budget working papers of GY Limited.

Production volume (units)	2,000	3,000
	£ per unit	£ per unit
Direct materials	6.00	6.00
Direct labour	7.50	7.50
Production overhead – department A	13.50	9.00
Production overhead – department B	7.80	5.80

(a) The total budgeted variable cost per unit is £ ☐

(b) The total budgeted fixed cost per period is £ ☐

❓ **Question 35**

A company undertaking long-term building contracts has a financial year end of 30 April. The following details on the purchase and use of machinery refer to contract A44, which was started on 1 May year 3 and is due for completion after 27 months.

1 July year 3:   Machine 1 was purchased at a cost of $55,000. It is to be used throughout the contract, and will be sold for $6,400 when the contract finishes.

1 October year 3:   Machine 2 was purchased at a cost of $28,600. The machine will be scrapped at the end of contract A44, and is not expected to have any saleable value.

If the company's policy is to charge depreciation in equal monthly amounts, the balance sheet value of machinery on contract A44 at 30 April year 4 will be $☐.

❓ **Question 36**

Data for product W are as follows.

Direct material cost per unit	£22
Direct labour cost per unit	£65
Direct labour hours per unit	5 hours
Production overhead absorption rate	£3 per direct labour hour
Mark-up for non-production overhead costs	8% of total production cost

The company requires a 15% return on sales revenue from all products.

The selling price per unit of product W, to the nearest penny, is £ ☐

❓ **Question 37**

G Ltd repairs electronic calculators. The wages budget for the last period was based on a standard repair time of 24 minutes per calculator and a standard wage rate of $10.60 per hour.
   Following the end of the budget period, it was reported that:

Number of repairs	31,000
Labour rate variance	$3,100 (A)
Labour efficiency variance	Nil

Based on the above information, the actual wage rate per hour during the period was $ ☐.

Question 38

Which ONE of the following factors could explain a favourable direct material usage variance?

A ☐   More staff were recruited to inspect for quality, resulting in a higher rejection rate.

B ☐   When estimating the standard product cost, usage of material had been set using ideal standards.

C ☐   The company had reduced training of production workers as part of a cost reduction exercise.

D ☐   The material price variance was adverse.

Question 39

A company produces a single product B. The company budgets to sell 2,200 units of product B during period 4 and sales are budgeted to be 10 per cent higher in period 5. It is company policy to hold stocks of finished goods equal to 20 per cent of the following period's sales.

The budgeted production of product B for period 4 is ☐ units.

Question 40

The following extract is taken from the delivery cost budget of D Limited:

Miles travelled	4,000	5,500
Delivery cost	£9,800	£10,475

The flexible budget cost allowance for 6,200 miles travelled is £☐.

Data for questions 41 to 49

Standard cost and revenue details for product C are as follows.

	£ per unit
Selling price	90.50
Direct material 12 kg at £1.70 per kg	20.40
Direct labour 3 hours at £14 per hour	42.00
Variable overhead	12.00

Budgeted sales and production for June were 47,200 units. However a machine breakdown occurred and as a result labour were idle for 150 hours and actual sales and production were 45,600 units.

Other actual data for June are as follows.

	£
Sales revenue	4,058,400
Direct material cost for 539,800 kg purchased and used	944,650
Direct labour cost for 134,100 hours, including 150 idle hours	1,850,580
Variable overhead cost	542,800

Question 41

The sales price variance for June is £☐ adverse/favourable

❓ **Question 42**
The sales volume contribution variance for June is £ ☐ adverse/favourable

❓ **Question 43**
The materials price variance for June is £ ☐ adverse/favourable

❓ **Question 44**
The materials usage variance for June is £ ☐ adverse/favourable

❓ **Question 45**
The idle time variance for June is £ ☐ adverse/favourable

❓ **Question 46**
The labour rate variance for June is £ ☐ adverse/favourable

❓ **Question 47**
The labour efficiency variance for June is £ ☐ adverse/favourable

❓ **Question 48**
The variable overhead expenditure variance for June is £ ☐ adverse/favourable

❓ **Question 49**
The variable overhead efficiency variance for June is £ ☐ adverse/favourable

❓ **Question 50**
A company provides a shirt laundering service. The standard cost and revenue for laundering one batch of shirts is as follows.

	£ per batch
Selling price	23
Materials cost (detergent, starch, etc.)	3
Labour cost	14
Variable overhead cost	1

Fixed costs incurred each month amount to £15,900.

The number of batches of shirts to be laundered to earn a profit of £4,300 per month is ☐ batches.

Second Mock Assessment – Solutions

✅ Solution 1

	Debit	*Credit*	*No entry in this account*
Production overhead control account	✔		
Work in progress account			✔
Finished goods account			✔
Profit and loss account		✔	

✅ Solution 2

(a) The margin of safety is shown on the diagram by k. This is the difference between the expected sales level and the breakeven point.

(b) m will decrease (extra fixed cost = lower profit)

k will decrease (extra fixed cost = higher breakeven point = smaller margin of safety)

f will increase (extra fixed cost = higher breakeven point)

p will increase (p = fixed costs, which have increased)

✅ Solution 3

The use of this method suggests the service departments carry out work for each other.

✅ Solution 4

The combination that is certain to lead to over-absorption is production activity higher than budget *and* fixed overhead expenditure lower than budget.

✅ Solution 5

The costs are all production overheads with the exception of the cost of ingredients, which is a direct cost.

✅ Solution 6

$A = £715$

$B = £979$

Workings:

Cost per complete unit in process $2 = £22,695/5,100 = £4.45$

Cost of abnormal gain units $= £4.45 \times 220 = £979$

Scrap value of normal loss per unit = £120/100 = £1.20
Forgone scrap value of abnormal gain = £1.20 × 220 units = £264
Transfer to profit and loss in respect of abnormal gain = £979 − £264 = £715

✅ Solution 7

Process account = credit; abnormal gain account = no entry in this account; abnormal loss account = debit.

Abnormal loss = (4,000 − 2,750 − 400 − 700) units = 150 units

✅ Solution 8

The value of the closing WIP was $4,158.

Statement of equivalent units

	Total units	Material equiv units	Labour equiv units	Production overhead equiv units
Finished goods	2,750	2,750	2,750	2,750
Normal loss	400	–	–	–
Abnormal loss	150	150	150	150
WIP c/fwd	700	700	350	280
		3,600	3,250	3,180
		$	$	$
Costs		16,000	8,125	3,498
Scrap value normal loss		(700)		
		15,300		
Cost per equivalent unit		$4.25	$2.50	$1.10

Statement of evaluation of WIP

	$
WIP c/fwd – material (700 × $4.25)	2,975
labour (350 × $2.50)	875
production overhead (280 × $1.10)	308
	4,158

✅ Solution 9

The overtime premium paid to the operator would be £35.70.
Overtime = 7 hours
Overtime premium per hour = £5.10
Overtime premium = £35.70

✅ Solution 10

The estimated price notified to the customer for job number 808 will be £23,446.

	£
Direct material	10,650
Direct labour	3,260
Prime cost	**13,910**
Production overhead (140 × £8.50)	1,190
Mark up on prime cost (60%)	8,346
	23,446

✅ Solution 11

Discounts are received on additional purchases of material when certain quantities are purchased. The graph depicts a variable cost where unit costs decease at certain levels of production.

✅ Solution 12

The estimated cost of carrying out health checks on 850 patients is £17,625.

	Patients	Total cost
		£
High	1,260	18,650
Low	650	17,125
	610	1,525

$$\text{Variable cost per patient} = \frac{£1,525}{610} = £2.50$$

At 650 patients:	£
Total cost	17,125
Total variable cost (650 × £2.50)	1,625
Total fixed cost	15,500

Total cost of 850 patients:	£
Fixed cost	15,500
Variable cost (850 × £2.50)	2,125
	17,625

✅ Solution 13

The principal budget factor for a footwear retailer is the constraint that is expected to limit the retailer's activities during the budget period.

✅ Solution 14

The estimated cash receipts from customers during the budget period are $54,950.

Cash received = Sales + opening debtors − closing debtors
$$= \$(55{,}800 + 8{,}500 - 9{,}350)$$
$$= \$54{,}950.$$

✅ Solution 15

The profit mark-up is 55%.

Cost of sales = Opening stock + purchases − closing stock
$$= \$(5{,}500 + 38{,}000 - 7{,}500)$$
$$= \$36{,}000$$

$36,000 + Mark up = $55,800

Mark Up = $19,800

$$\text{Mark Up\%} = \frac{19{,}800}{36{,}000} \times 100\% = 55\%.$$

✅ Solution 16

The appropriate actions are (ii) and (iv). These are short term actions to cover a temporary cash shortage. Actions (i) and (iii) would be more appropriate for a longer term cash shortage.

✅ Solution 17

(a) The limiting factor would be direct labour.

	X	Y	Z	Total
Material (kg)	20,000	22,000	42,000	84,000
Direct labour (hours)	4,000	4,125	10,500	18,625

(b) First: product Y; Second: product X; Third: product Z

	X	Y	Z
	£	£	£
Selling price	28	22	30
Variable cost	17	13	24
Contribution	11	9	6
Kg	5	4	6
Contribution per kg	£2.20	£2.25	£1.00
Ranking	2	1	3

✅ Solution 18

A performance standard which assumes efficient levels of operation, but which includes allowances for factors such as waste and machine downtime is known as an attainable standard.

✅ Solution 19

The margin of safety represents 8.3% of budgeted sales.

$$\text{BEP} = \frac{\$(430{,}500 + 198{,}150)}{\$11.60 - \$(3.40 + 0.58)} = 82{,}500 \text{ units}$$

$$\text{Margin of safety} = \frac{90{,}000 - 82{,}500}{90{,}000} \times 100\% = 8.3\%$$

✅ Solution 20

These changes will cause the breakeven point to be 79,879 units.

$$\text{New BEP} = \frac{\$628{,}650}{\$12.25 - \$(3.40 + 0.98)} = 79{,}879 \text{ units.}$$

✅ Solution 21

Over long time periods of several years, supervisory labour costs will tend to behave as step fixed costs.

✅ Solution 22

Material control account = debit; work in progress = no entry in this account; material price variance account = credit.

The price variance is calculated at the point of purchase therefore the work in progress account is not affected. The favourable variance is credited to the variance account and debited in the material control account.

✅ Solution 23

Wages control account = no entry in this account; labour variance account = debit; work in progress control account = credit.

The efficiency variance is recorded at the point at which it arises, i.e. in the work in progress account rather than in the wages control account. The adverse variance is debited to the variance account.

✅ Solution 24

The graph represents piecework with a guaranteed minimum daily wage.

✅ Solution 25

Production overhead will be reported as $3,660 under absorbed.

Machine hour rate = $180,000/40,000 = $4.50 per machine hour

	$
Overheads incurred	178,080
Overheads absorbed (38,760 × $4.50)	174,420
Under absorbed	3,660

✅ Solution 26

Using FIFO, the value of the closing stock would be $76.

Units in stock = 460 purchased − 420 issued = 40 units.

Issues would have been made at the earliest prices therefore the latest prices paid would be used to value remaining stock = 40 units × $1.90 = $76.

✅ Solution 27

(a) Closing stock value will be lower (prices are rising and FIFO uses latest prices to value stock held in the stores)

(b) Gross profit for the week will be lower (higher average price charged to cost of sales)

✅ Solution 28

r will increase (r = loss at zero activity = fixed costs)

w will decrease (w = profit = lower if fixed costs increase)

t will decrease (t = margin of safety = lower if fixed costs increase)

u will increase (u = breakeven volume = higher if fixed costs increase)

✅ Solution 29

Profit will increase by $28,000.

Contribution per unit = $(w + r)/(t + u)$ = $(16,000 + 50,000)/(800 + 2,500) = $20

Increase in profit = 1,400 additional units × $20 = $28,000

✅ Solution 30

(i), (ii) and (iv) will increase the contribution/sales ratio.

(i) Lower variable costs per unit, higher contribution per unit = higher C/S ratio

(ii) Lower variable costs per unit, higher contribution per unit = higher C/S ratio

(iii) Lower selling price per unit, lower contribution per unit = lower C/S ratio

(iv) Higher average contribution per unit = higher C/S ratio

(v) Lower selling price per unit, lower contribution per unit = lower C/S ratio

✅ Solution 31

The prime cost of contract A42 is $44,720.

	$
Direct materials	5,500
Direct expenses	14,500
Basic staff hours 1,020 hrs × $24	24,480
Overtime premium 40 hrs × $6	240
	44,720

✅ Solution 32

The budgeted production of product G in month 2 is 230 units.

Workings:

	units
Closing stock month 2 (290 + 230)	520
Month 2 sales requirements	420
	940
Less opening stock month 2 (420 + 290)	(710)
Budgeted production month 2	230 (i.e. month 4 sales volume)

✅ Solution 33

The budgeted purchases of liquid K in month 2 are 420 litres.

Workings:
Purchases each month will be the quantity required for production the following month. Production in month 3 = 210 units (month 5 sales) therefore purchases in month 2 will be 210 × 2 litres = 420 litres.

✅ Solution 34

(a) The total budgeted variable cost per unit is £15.30
(b) The total budgeted fixed cost per period is £39,000

Workings:
Department A production overhead = fixed cost
  = 2,000 units × £13.50 or 3,000 units × £9.00
  = £27,000

Department B production overhead = semi-variable cost
Using the high-low method:

	Units	Total cost
		£
	3,000	17,400
	2,000	15,600
	1,000	1,800

Variable cost per unit = £1,800/1,000 = £1.80
Fixed cost = £17,400 − £(1.80 × 3,000) = £12,000

Total budgeted variable cost = £(6.00 + 7.50 + 1.80) = £15.30
Total budgeted fixed cost = £(27,000 + 12,000) = £39,000

☑ Solution 35

The balance sheet value of machinery on contract A44 at 30 April year 4 is $55,060.

	Machine 1		Machine 2
	$		$
Cost	55,000		28,600
Depreciation $\dfrac{(55,000 - 6,400)}{25\,months} \times 10$	19,440	$\dfrac{28,600}{22\,months} \times 7$	9,100
	35,560		19,500

Net book value = $35,560 + $19,500 = $55,060

☑ Solution 36

The selling price per unit of product W, to the nearest penny is £129.60

Workings:

	£ per unit
Direct material cost	22.00
Direct labour cost	65.00
Production overhead absorbed = 5 hours × £3	15.00
Total production cost	102.00
Mark-up for non-production costs = 8% × £102.00	8.16
Full cost	110.16
Profit mark-up = 15/85 × £110.16	19.44
Selling price	129.60

☑ Solution 37

Labour efficiency variance = zero, therefore hours worked = standard hours for 31,000 repairs.

Hours worked = 31,000 × 24/60 = 12,400 hours

Adverse rate variance per hour = $3,100/12,400 = $0.25
Therefore, actual wage rate per hour = $10.60 + $0.25 = $10.85

☑ Solution 38

Option D is the only factor that could explain a favourable direct material usage variance. Higher priced material may be of a higher quality than standard with the result that scrap and rejections were lower than standard.

Options A to C are all likely to result in an adverse direct material usage variance.

✓ Solution 39

The budgeted production of product B for period 4 is 2,244 units.

	Units
Period 4 sales	2,200
Period 4 closing stock (2,200 × 1.10 × 0.20)	484
Period 4 opening stock (2,200 × 0.20)	(440)
Period 4 budgeted production	2,244

✓ Solution 40

The flexible budget cost allowance for 6,200 miles travelled is £10,790.

	Miles	£
High	5,500	10,475
Low	4,000	9,800
	1,500	675

Variable cost per mile = £675/1,500 = £0.45
Fixed cost = £10,475 − £(0.45 × 5,500) = £8,000
Total cost for 6,200 miles = £8,000 + £(0.45 × 6,200) = £10,790

✓ Solution 41

The sales price variance for June is £68,400 adverse.

Workings:

	£
45,600 units should sell for (× £90.50)	4,126,800
But did sell for	4,058,400
	68,400 adverse

✓ Solution 42

The sales volume contribution variance for June is £25,760 adverse

Workings:

Actual sales volume	45,600 units
Budget sales volume	47,200 units
Sales volume variance in units	1,600 units adverse
× standard contribution per unit	× £16.10
	£25,760 adverse

✅ Solution 43

The materials price variance for June is £26,990 adverse

Workings:

	£
539,800 kg should cost (× £1.70)	917,660
but did cost	944,650
	26,990 adverse

✅ Solution 44

The materials usage variance for June is £12,580 favourable

Workings:

45,600 units produced should use (× 12 kg)	547,200 kg
But did use	539,800 kg
Variance in kg	7,400 kg favourable
× standard price per kg	×£1.70
	£12,580 favourable

✅ Solution 45

The idle time variance for June is £2,100 adverse

Workings:
Idle time variance = 150 hours idle × £14 standard labour cost per hour = £2,100 adverse

✅ Solution 46

The labour rate variance for June is £26,820 favourable

Workings:

	£
134,100 hours should cost (× £14)	1,877,400
but did cost	1,850,580
	26,820 favourable

✅ Solution 47

The labour efficiency variance for June is £39,900 favourable

Workings:

45,600 units produced should take (× 3 hours)	136,800 hours
But did take (active hours)	133,950 hours
Variance in hours	2,850 hours favourable
× standard rate per hour	× £14
	£39,900 favourable

✅ Solution 48

The variable overhead expenditure variance for June is £7,000 adverse

Workings:

	£
133,950 active hours should cost (× £4)	535,800
but did cost	542,800
	7,000 adverse

✅ Solution 49

The variable overhead efficiency variance for June is £11,400 favourable

Workings:

Efficiency variance in hours from labour variance	2,850 hours favourable
× standard rate per hour	× £4
	£11,400 favourable

✅ Solution 50

The number of batches of shirts to be laundered to earn a profit of £4,300 per month is 4,040 batches.

Workings:
Contribution per batch of shirts = £(23 − 3 − 14 − 1) = £5
Number of batches to achieve required profit = £(15,900 + 4,300)/£5 = 4,040 batches