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ACCA Management Accounting

Topic by Topic Quiz

Finprep Academy

ACCA Management Accounting Quiz Question Compilation

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Disclaimer! This material is not intended to replace practicing past questions. By organizing quizzes topic by topic, it is designed to make it easier for you to test your understanding immediately after studying a topic. Candidates are encouraged to also familiarize themselves with the way the exam body sets its examination questions.

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Absorption vs. Marginal Costing

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Global Gadgets Plc produced 10,000 units and sold 9,000 units of its flagship product during the month of October. There was no opening inventory. The following costs were incurred:

- Direct materials: £10 per unit
- Direct labour: £8 per unit
- Variable production overheads: £2 per unit
- Fixed production overheads: £90,000
- Variable selling costs: £3 per unit sold
- Fixed administration costs: £20,000

The selling price per unit was £50.

Using absorption costing, what is the profit for the month of October? Round to the nearest whole number.

- **A.** £160,000
- **B.** £142,000
- **C.** £189,000
- **D.** £133,000

Question 2

Global Gadgets Plc produced 10,000 units and sold 9,000 units of its flagship product during the month of October. There was no opening inventory. The following costs were incurred:

- Direct materials: £10 per unit
- Direct labour: £8 per unit
- Variable production overheads: £2 per unit
- Fixed production overheads: £90,000
- Variable selling costs: £3 per unit sold
- Fixed administration costs: £20,000

The selling price per unit was £50.

Using marginal costing, what is the profit for the month of October? Round to the nearest whole number.

- **A.** £142,000
- **B.** £133,000
- **C.** £243,000
- **D.** £160,000

Question 3

Harmony Homes Ltd manufactures prefabricated housing units. In the last quarter, the company's sales volume exceeded its production volume, leading to a reduction in inventory levels. The finance team is preparing both absorption costing and marginal costing profit statements.

Which statement accurately describes the impact of this inventory change on the profit figures and inventory valuation under both methods?

- **A.** Marginal costing profit will be higher than absorption costing profit, and absorption costing values inventory higher.
- **B.** Marginal costing profit will be lower than absorption costing profit, and marginal costing values inventory higher.
- **C.** Absorption costing profit will be higher than marginal costing profit, and absorption costing values inventory higher.
- **D.** Both costing methods will report the same profit, but marginal costing values inventory higher.

Question 4

Quality Crafts Co. reported an opening inventory of 2,000 units and a closing inventory of 1,200 units for its latest financial period. The fixed production overhead absorption rate for the period was £6 per unit.

How does the profit calculated under marginal costing compare to the profit calculated under absorption costing for this period?

- **A.** Marginal costing profit is £4,800 higher than absorption costing profit.
- **B.** Absorption costing profit is £4,800 higher than marginal costing profit.
- **C.** Marginal costing profit is £7,200 higher than absorption costing profit.
- **D.** There is no difference in profit between the two methods.

Question 5

Zenith Manufacturing Ltd produces a single product. For the most recent accounting period, the company's opening inventory was 1,000 units and its closing inventory was 1,500 units. The fixed production overhead absorption rate for the period was £5 per unit.

Based on this information, what is the difference in profit between absorption costing and marginal costing for the period?

- **A.** Marginal costing profit is £2,500 higher than absorption costing profit.
- **B.** There is no difference in profit between the two methods.
- **C.** Absorption costing profit is £2,500 lower than marginal costing profit.
- **D.** Absorption costing profit is £2,500 higher than marginal costing profit.

Question 6

Horizon Manufacturing budgeted its fixed production overheads at £150,000 for a production volume of 30,000 units. During the period, actual fixed production overheads amounted to £165,000, and actual production was 32,000 units.

What was the amount of under or overabsorption of fixed production overheads for the period?

- **A.** £5,000 overabsorbed
- **B.** £5,000 underabsorbed
- **C.** £15,000 overabsorbed
- **D.** £10,000 underabsorbed

Question 7

Elite Electronics manufactures a specialized circuit board. The following cost data is available for the upcoming period:

- Direct materials: £25 per unit
- Direct labour: £18 per unit
- Variable production overheads: £7 per unit
- Fixed production overheads are budgeted at £200,000 for an expected production of 40,000 units.

What is the full production cost per unit under absorption costing?

- **A.** £45
- **B.** £50
- **C.** £55

- **D.** £60

Question 8

Alpha Solutions experienced a period where its production volume significantly exceeded its sales volume, leading to a substantial increase in inventory levels. The management accountant is preparing the financial statements using both absorption costing and marginal costing methods.

How will the reported profit under absorption costing compare to the reported profit under marginal costing in this scenario?

- **A.** The difference in profit cannot be determined without knowing the fixed overheads.
- **B.** Absorption costing profit will be higher than marginal costing profit.
- **C.** The profits under both methods will be identical.
- **D.** Absorption costing profit will be lower than marginal costing profit.

Question 9

Tech Innovations Ltd manufactures a high-tech component. The costs associated with producing one unit are as follows:

- Direct materials: £15
- Direct labour: £12
- Variable production overheads: £3
- Fixed production overheads: £100,000 (based on 20,000 units of production)

What is the marginal production cost per unit?

- **A.** £25
- **B.** £27
- **C.** £35
- **D.** £30

Question 10

A manufacturing company, **Precision Parts Ltd**, is evaluating its costing methods. The primary distinction between absorption costing and marginal costing lies in their treatment of a specific cost element.

Which cost element is treated differently by absorption costing and marginal costing, forming the core difference between the two methods?

- **A.** Fixed production overheads
- **B.** Variable selling and administration costs
- **C.** Direct materials costs
- **D.** Variable production overheads

Answer Key and Explanations

1. Correct Answer: B. £142,000

- **Explanation:** First, calculate the fixed production overhead absorption rate (OAR): £90,000 / 10,000 units = £9 per unit.
  Absorption costing unit cost = Direct materials (£10) + Direct labour (£8) + Variable production overheads (£2) + Fixed production overheads (OAR £9) = £29 per unit.
  Sales revenue = 9,000 units x £50 = £450,000.
  Cost of goods produced = 10,000 units x £29 = £290,000.
  Closing inventory = (10,000 - 9,000) units x £29 = £29,000.
  Cost of sales = £290,000 - £29,000 = £261,000.
  Gross profit = £450,000 - £261,000 = £189,000.
  There is no under/over absorption as actual fixed overheads (£90,000) equal absorbed fixed overheads (10,000 units x £9 = £90,000).
  Total non-production costs = Variable selling costs (9,000 units x £3 = £27,000) + Fixed administration costs (£20,000) = £47,000.
  Profit = Gross profit - Total non-production costs = £189,000 - £47,000 = £142,000.

2. Correct Answer: B. £133,000

- **Explanation:** Marginal production cost per unit = Direct materials (£10) + Direct labour (£8) + Variable production overheads (£2) = £20 per unit.
  Sales revenue = 9,000 units x £50 = £450,000.
  Variable cost of goods produced = 10,000 units x £20 = £200,000.
  Closing inventory = (10,000 - 9,000) units x £20 = £20,000.
  Variable cost of sales = £200,000 - £20,000 = £180,000.
  Total variable costs = Variable cost of sales (£180,000) + Variable selling costs (9,000 units x £3 = £27,000) = £207,000.
  Total contribution = Sales revenue - Total variable costs = £450,000 - £207,000 = £243,000.
  Total fixed costs = Fixed production overheads (£90,000) + Fixed administration costs (£20,000) = £110,000.
  Profit = Total contribution - Total fixed costs = £243,000 - £110,000 = £133,000.

3. Correct Answer: A. Marginal costing profit will be higher than absorption costing profit, and absorption costing values inventory higher.

- **Explanation:** When inventory levels decrease (production is less than sales), marginal costing will report a higher profit than absorption costing. This is because absorption costing will release fixed production overheads from opening inventory (which were carried forward from a previous period) into the cost of sales, in addition to the current period's fixed overheads. Marginal costing, however, only charges the current period's fixed overheads. Regardless of inventory changes, absorption costing always values inventory higher than marginal costing because it includes fixed production overheads in the unit cost, while marginal costing does not.

4. Correct Answer: A. Marginal costing profit is £4,800 higher than absorption costing profit.

- **Explanation:** When inventory levels decrease (sales exceed production), marginal costing reports a higher profit than absorption costing. This is because absorption costing releases fixed overheads from opening inventory that were absorbed in a prior period, in addition to absorbing current period overheads, while marginal costing only charges current period fixed overheads. The difference in profit is calculated as (Opening Inventory Units - Closing Inventory Units) x Fixed Overhead Absorption Rate per Unit. In this case, (2,000 - 1,200) x £6 = 800 x £6 = £4,800. A positive difference indicates that marginal costing profit is higher by £4,800.

5. Correct Answer: D. Absorption costing profit is £2,500 higher than marginal costing profit.

- **Explanation:** When inventory levels increase (production exceeds sales), absorption costing reports a higher profit than marginal costing. This is because absorption costing carries a portion of fixed overheads in the closing inventory, whereas marginal costing charges all fixed overheads to the period in which they are incurred. The difference in profit is calculated as (Opening Inventory Units - Closing Inventory Units) x Fixed Overhead Absorption Rate per Unit. In this case, (1,000 - 1,500) x £5 = -£2,500. A negative difference indicates that absorption costing profit is higher by £2,500.

6. Correct Answer: B. £5,000 underabsorbed

- **Explanation:** First, calculate the fixed overhead absorption rate (OAR): Budgeted Fixed Production Overheads / Budgeted Production Units = £150,000 / 30,000 units = £5 per unit.
  Next, calculate the fixed overheads absorbed: Actual Production Units x OAR = 32,000 units x £5/unit = £160,000.
  Finally, determine under or overabsorption: Actual Fixed Production Overheads - Absorbed Fixed Production Overheads = £165,000 - £160,000 = £5,000.
  Since actual overheads (£165,000) are greater than absorbed overheads (£160,000), the overheads are £5,000 underabsorbed.

7. Correct Answer: C. £55

- **Explanation:** Under absorption costing, the full product cost includes direct costs and a proportional share of fixed production overheads.
  First, calculate the fixed overhead absorption rate (OAR): Budgeted Fixed Production Overheads / Budgeted Production Units = £200,000 / 40,000 units = £5 per unit.
  Full production cost per unit = Direct materials (£25) + Direct labour (£18) + Variable production overheads (£7) + Fixed production overheads (OAR £5) = £55.

8. Correct Answer: B. Absorption costing profit will be higher than marginal costing profit.

- **Explanation:** When inventory levels increase (production is greater than sales), absorption costing will report a higher profit than marginal costing. This is because absorption costing includes a portion of fixed production overheads in the value of closing inventory, effectively deferring these costs to a future period. Marginal costing, however, treats all fixed production overheads as period costs, expensing them in full in the period they are incurred.

9. Correct Answer: D. £30

- **Explanation:** The marginal production cost per unit is the sum of all variable costs needed to produce one unit. This includes direct material, direct labour, direct expenses (if any), and variable production overheads. Fixed production overheads are not included in the marginal cost per unit.
  Marginal production cost per unit = Direct materials (£15) + Direct labour (£12) + Variable production overheads (£3) = £30.

10. Correct Answer: A. Fixed production overheads

- **Explanation:** The core difference between absorption costing and marginal costing is the treatment of fixed production overheads. Absorption costing assigns fixed production overheads to units produced, including them in unit cost and inventory valuation. Marginal costing treats fixed production overheads as period costs, deducting them in full from contribution in the period they are incurred.

Accounting for Labour

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Gamma Products Ltd. incurred various labour costs last month. These included basic pay for assembly line workers, salaries for maintenance staff, and contributions to employee pension schemes.

Which of these costs would typically be classified as indirect labour costs?

- **A.** Basic pay for assembly line workers only
- **B.** Salaries for maintenance staff and contributions to employee pension schemes only
- **C.** Basic pay for assembly line workers and salaries for maintenance staff only
- **D.** All three: basic pay for assembly line workers, salaries for maintenance staff, and contributions to employee pension schemes

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Question 2

A production worker at **Alpha Manufacturing Ltd.** worked 45 hours in a week. Their basic rate is £12 per hour. Overtime is paid at a premium of 50% of the basic rate for hours exceeding 40.

What are the total wages payable to the worker for the week?

- **A.** £630
- **B.** £570
- **C.** £600
- **D.** £540

Question 3

Lambda Products had a total budgeted labour hours of 7,500 for the period. For the actual output achieved, the standard hours allowed were 7,200 hours.

What is Lambda Products' Production Volume Ratio for the period? (Round to two decimal places)

- **A.** 96.00%
- **B.** 108.33%
- **C.** 104.17%
- **D.** 92.00%

Question 4

Kappa Manufacturing budgeted for 6,000 labour hours to be available for production in a given month. The actual hours worked by the labour force during that month amounted to 5,400 hours.

What is Kappa Manufacturing's Labour Capacity Ratio for the month? (Round to two decimal places)

- **A.** 85.00%
- **B.** 90.00%
- **C.** 100.00%
- **D.** 111.11%

Question 5

The management team at **Xi Manufacturing** is reviewing its labour cost classifications. They are trying to identify all components that should be treated as indirect labour costs.

Which of the following would be classified as indirect labour costs?

- **A.** Basic pay of direct production workers
- **B.** Idle time, sick pay, and bonus payments
- **C.** Overtime premium for a customer-specific job
- **D.** Basic pay for direct production workers and overtime premium for a customer-specific job

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Question 6

Alpha Manufacturing produced 1,200 units in a period. The standard time allowed for each unit is 0.5 hours. The *actual hours worked* by the production team during this period were 700 hours.

Calculate the *Labour Efficiency Ratio* for **Alpha Manufacturing**, rounding your answer to two decimal places. Which of the following is correct?

- **A.** 100.00%
- **B.** 85.71%
- **C.** 90.00%
- **D.** 116.67%

Question 7

Delta Manufacturing pays its production workers using a *Time-Related System*. The *basic rate* is £12 per hour. Overtime is paid at time-and-a-half (basic rate plus 50% premium). Last week, a worker worked 40 standard hours and 5 *overtime hours*.

Calculate the *total wages* for this worker for the last week. Which of the following is correct?

- **A.** £510
- **B.** £570
- **C.** £540
- **D.** £600

Question 8

Iota Ltd. produced 1,200 units of a product. The standard time allowed for this output was 4,800 hours. However, the actual hours worked by the production team were 5,000 hours.

What is Iota Ltd.'s Labour Efficiency Ratio? (Round to two decimal places)

- **A.** 92.00%
- **B.** 96.00%
- **C.** 104.17%
- **D.** 108.33%

Question 9

Nu Innovations is considering implementing a time-related remuneration system for its assembly line workers.

What is a significant potential drawback of a time-related remuneration system?

- **A.** It is difficult to calculate total wages accurately
- **B.** It inherently incentivises high productivity without close supervision
- **C.** It often requires close supervision as it does not inherently incentivise productivity
- **D.** It leads to inconsistent wage payments for employees

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Question 10

Delta Manufacturing requires its production staff to work overtime every Saturday to meet general production targets. The basic rate for overtime hours is £15 per hour, and an overtime premium of £7.50 per hour is paid.

How should the overtime premium of £7.50 per hour be classified in the company's accounting records?

- **A.** As a direct production overhead

- **B.** As an indirect labour cost
- **C.** As part of the prime cost
- **D.** As a direct labour cost

Answer Key and Explanations

1. Correct Answer: B. Salaries for maintenance staff and contributions to employee pension schemes only

- **Explanation:** Direct labour costs are for employees directly involved in producing the output, such as basic pay for assembly line workers. Indirect labour costs include employees not directly involved in production (e.g., maintenance staff) and benefit contributions. Therefore, salaries for maintenance staff and contributions to employee pension schemes are indirect labour costs, forming part of overheads in the production process.

2. Correct Answer: B. £570

- **Explanation:** Total wages are calculated as (total hours worked × basic rate) + (overtime hours × overtime premium). Basic pay for 45 hours at £12/hour is £540. Overtime hours are 5 (45-40). The overtime premium rate is 50% of £12, which is £6 per hour. So, the overtime premium is 5 hours × £6 = £30. Total wages = £540 + £30 = £570. This calculation is a key aspect of accounting for labour costs.

3. Correct Answer: A. 96.00%

- **Explanation:** The Production Volume Ratio measures capacity usage relative to the output budget and is calculated as (Standard hours for actual output / Total budgeted hours) × 100%. For Lambda Products, this is (7,200 hours / 7,500 hours) × 100% = 96.00%. This ratio helps management understand the overall production performance against the budget.

4. Correct Answer: B. 90.00%

- **Explanation:** The Labour Capacity Ratio measures the utilisation of time available and is calculated as (Actual hours worked / Total budgeted hours) × 100%. For Kappa Manufacturing, this is (5,400 hours / 6,000 hours) × 100% = 90.00%. This ratio provides insight into how well the budgeted labour capacity is being used for production.

5. Correct Answer: B. Idle time, sick pay, and bonus payments

- **Explanation:** Indirect labour costs include bonus payments, benefit contributions, idle time (paid but nonproductive), sick pay, and time spent by direct workers on indirect jobs. Basic pay of direct production workers is a direct labour cost. An overtime premium for a customer-specific job is an exception and is also a direct labour cost.

6. Correct Answer: B. 85.71%

- **Explanation:** The Labour Efficiency Ratio is calculated as (Standard hours for actual output / Actual hours worked) x 100%.
  Standard hours for actual output = 1,200 units x 0.5 hours/unit = 600 hours.

Actual hours worked = 700 hours.
Ratio = (600 / 700) x 100% = 85.714...%, which rounds to 85.71%.

7. Correct Answer: B. £570

- **Explanation:** Total wages = (total hours worked x basic rate) + (overtime hours x overtime premium).
  Basic pay for all hours worked (40 standard + 5 overtime) = 45 hours x £12/hour = £540.
  Overtime premium = 5 overtime hours x (£12 x 0.5) = 5 hours x £6/hour = £30.
  Total wages = £540 + £30 = £570.

8. Correct Answer: B. 96.00%

- **Explanation:** The Labour Efficiency Ratio measures the effectiveness of time utilised and is calculated as (Standard hours for actual output / Actual hours worked) × 100%. In this case, (4,800 hours / 5,000 hours) × 100% = 96.00%. This ratio helps management assess labour performance.

9. Correct Answer: C. It often requires close supervision as it does not inherently incentivise productivity

- **Explanation:** A key characteristic of time-related remuneration systems is that pay is based on time worked, not output. This means it does not inherently incentivise productivity, often necessitating close management supervision to ensure workers are efficient in their production.

10. Correct Answer: B. As an indirect labour cost

- **Explanation:** Overtime premiums are generally classified as indirect labour costs. The exception is if the overtime is worked at the specific request of a customer for a specific job. Since this overtime is for general production targets, the premium is an indirect labour cost.

Accounting for Management

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Iota Logistics is considering replacing an old delivery truck. The old truck has a book value of £10,000 and could be sold now for £3,000. Its remaining useful life is 3 years, and it incurs annual operating costs of £8,000. A new truck costs £40,000, has a useful life of 5 years, and would incur annual operating costs of £5,000. Depreciation is a non-cash item.

What are the *relevant cash flows* to consider over the next three years if Iota Logistics decides to replace the old truck with a new one immediately? (Ignore the time value of money).

- **A.** -£38,000
- **B.** -£18,000
- **C.** -£28,000
- **D.** -£45,000

Question 2

Zeta Services is considering discontinuing one of its service lines, 'Basic Support'. This service line currently generates revenue of £150,000 per year. Its direct costs are £80,000 (variable) and £30,000 (fixed, directly attributable to Basic Support). Additionally, £20,000 of general fixed overheads are allocated to Basic Support, but these overheads would be reallocated to other service lines if Basic Support is discontinued, not eliminated.

What is the annual financial impact if Zeta Services discontinues the 'Basic Support' service line?

- **A.** £10,000 decrease in profit
- **B.** £20,000 increase in profit
- **C.** £50,000 decrease in profit
- **D.** £40,000 decrease in profit

Question 3

Epsilon Components currently manufactures a component for £30 per unit, consisting of £15 direct materials, £10 direct labour, and £5 variable overhead. Fixed overheads are £100,000 per year and are allocated at £5 per unit based on normal production of 20,000 units. An external supplier offers to sell the component for £27 per

unit. If Epsilon Components buys the component, 40% of the fixed overheads can be avoided. The company needs 10,000 units of this component annually.

What is the relevant cost per unit for Epsilon Components to *make* the component, for the purpose of deciding whether to make or buy?

- **A.** £34
- **B.** £27
- **C.** £25
- **D.** £30

Question 4

A company, **Alpha Ltd**, has received a special order for 500 units of a product. The normal selling price is £100 per unit, but the special order offers £70 per unit. Current production capacity is 10,000 units, and the company is currently producing and selling 9,500 units. The variable cost per unit is £45. Fixed costs are £200,000 per year and will not change with this order. The special order requires a specific component that costs £10 per unit, which is not used in regular production.

What is the incremental profit (or loss) from accepting this special order?

- **A.** £2,500 loss
- **B.** £7,500 profit
- **C.** £35,000 profit
- **D.** £12,500 profit

Question 5

Gamma Manufacturing has 1,000 defective units of product X, which cost £20 per unit to produce. These units can be sold as scrap for £5 per unit. Alternatively, they can be reworked at a cost of £12 per unit. After rework, the units can be sold for £25 per unit. The original production cost of £20 per unit is a sunk cost.

What is the net financial benefit (or cost) of reworking the 1,000 units compared to selling them as scrap?

- **A.** £2,000 cost
- **B.** £13,000 benefit
- **C.** £18,000 benefit
- **D.** £8,000 benefit

Question 6

Theta Industries has a machine that can produce either Product A or Product B. The machine has limited capacity of 1,000 hours per month. Product A requires 2 hours per unit and generates a contribution of £50 per unit. Product B requires 3 hours per unit and generates a contribution of £70 per unit. Theta Industries has an order for 300 units of Product A, which it plans to fulfill.

What is the opportunity cost per unit of Product A, in terms of lost contribution from Product B, if the company prioritizes Product A? (Round to two decimal places)

- **A.** £23.33
- **B.** £70.00
- **C.** £50.00
- **D.** £46.67

Question 7

Xi Engineering has a limited supply of a specialized material, **Material Z**, which costs £10 per kg. The company has 500 kg of Material Z in stock, which was purchased for a specific project that has now been cancelled. The material could be sold for £8 per kg. Xi Engineering is considering a new project that requires 200 kg of Material Z. If this project is undertaken, any additional Material Z needed beyond the 500 kg in stock would cost £12 per kg to purchase.

What is the relevant cost of Material Z for the new project?

- **A.** £1,600
- **B.** £2,000
- **C.** £2,400
- **D.** £1,000

Question 8

The board of **Eco-Friendly Builders Ltd** is deciding whether to adopt a new, more sustainable but slightly more expensive building material. Financial projections show a marginal increase in project costs. However, the marketing director highlights potential benefits such as enhanced company reputation, improved staff morale due to working on environmentally conscious projects, and increased customer loyalty from a growing segment of eco-aware clients. The management acknowledges these factors are difficult to quantify in monetary terms.

Which of the following is correct?

- **A.** Historical data
- **B.** Quantitative data
- **C.** Non-financial information

- **D.** Financial information

Question 9

The CEO of **FitLife Gyms Ltd** has announced a new objective for the coming year: "We need to improve our customer service significantly." While the sentiment is positive, the operations director is struggling to translate this into actionable plans for the gym managers. They feel the objective lacks clarity and specific targets for the management to work towards.

Which of the following is correct?

- **A.** Measurable
- **B.** Specific
- **C.** Relevant
- **D.** Attainable

Question 10

Omicron Enterprises is a limited company that prepares its annual financial statements in accordance with International Financial Reporting Standards (IFRS) and submits them to regulatory bodies. In contrast, its internal departmental performance reports are tailored to specific managerial needs and do not follow any external accounting standards.

Which key difference between management accounting and financial accounting is highlighted by this scenario?

- **A.** Primary users
- **B.** Time period
- **C.** Legal requirements
- **D.** Nature of information

Answer Key and Explanations

1. Correct Answer: C. -£28,000

- **Explanation:** Relevant costs are future, incremental cash flows. The book value of the old truck is a sunk cost and irrelevant. Depreciation is a non-cash item and therefore not a relevant cash flow. The relevant cash flows include:
    1. Proceeds from selling the old truck: +£3,000
    2. Cost of purchasing the new truck: -£40,000

3. Avoided operating costs of old truck (3 years): 3x£8,000 = +£24,000
4. Incurred operating costs of new truck (3 years): 3x£5,000 = -£15,000
   Total relevant cash flows = £3,000 - £40,000 + £24,000 - £15,000 = -£28,000.

2. Correct Answer: D. £40,000 decrease in profit

- **Explanation:** When deciding whether to discontinue a service line, only future, incremental cash flows are relevant. This includes the revenue lost and the costs that can be avoided. The allocated general fixed overheads are not relevant because they will simply be reallocated to other service lines and will not be eliminated from the company's total costs.
  Loss of revenue = -£150,000
  Avoided variable costs = +£80,000
  Avoided direct fixed costs = +£30,000
  Net financial impact = -£150,000 + £80,000 + £30,000 = -£40,000 (a decrease in profit).

3. Correct Answer: A. £34

- **Explanation:** Relevant costs are future, incremental cash flows. Direct materials, direct labour, and variable overhead are all incremental. The allocated fixed overhead is only relevant to the extent it can be avoided if the component is not made internally. In this case, 40% of the total fixed overhead (£100,000) can be avoided, which is £40,000. For the required 10,000 units, this translates to £4 per unit.
  Relevant cost to make per unit = £15 (Direct materials) + £10 (Direct labour) + £5 (Variable overhead) + £4 (Avoidable fixed overhead) = £34.

4. Correct Answer: B. £7,500 profit

- **Explanation:** The relevant costs for this decision are the future, incremental cash flows. This includes the special order revenue and the variable costs directly associated with producing the additional units, including the special component. Fixed costs are not relevant as they do not change with the decision.
  Incremental revenue = 500 units x £70/unit = £35,000
  Incremental costs = (Variable cost per unit + Special component cost per unit) x Number of units = (£45 + £10) x 500 = £55 x 500 = £27,500
  Incremental profit = £35,000 - £27,500 = £7,500

5. Correct Answer: D. £8,000 benefit

- **Explanation:** The original production cost is a sunk cost and irrelevant. The decision should focus on the future, incremental cash flows.
  Revenue from selling as scrap = 1,000 units x £5/unit = £5,000.
  Net from reworking = (Revenue after rework - Cost of rework) = (1,000 units x £25/unit) - (1,000 units x £12/unit) = £25,000 - £12,000 = £13,000.
  Net financial benefit of reworking vs. selling as scrap = £13,000 - £5,000 = £8,000 benefit.

6. Correct Answer: D. £46.67

- **Explanation:** Opportunity cost is the benefit foregone by choosing one alternative over another. By using 2 hours to produce one unit of Product A, the company foregoes the contribution that could have been earned by using those same 2 hours to produce Product B.
  In 2 hours, the company could produce 2 hours / 3 hours per unit = 2/3 units of Product B.
  Lost contribution from Product B = (2/3) x £70 = £46.666... which rounds to £46.67.

7. Correct Answer: A. £1,600

- **Explanation:** The relevant cost of using existing inventory for a new project is its opportunity cost. Since the material could be sold for £8 per kg, using it for the project means foregoing that potential revenue. The original purchase price is a sunk cost and irrelevant. The higher replacement cost is only relevant if the existing stock is insufficient.
  Relevant cost = 200 kg x £8/kg (selling price) = £1,600.

8. Correct Answer: C. Non-financial information

- **Explanation:** Managers also rely on qualitative, behavioural, motivational, and environmental factors, which can be just as important as financial data but are often difficult to estimate and quantify. Enhanced company reputation, staff morale, and customer loyalty fall into this category of non-financial information for management decisions.

9. Correct Answer: B. Specific

- **Explanation:** Objectives should be SMART: Specific, Measurable, Attainable/Achievable, Relevant, Timebound. The CEO's objective 'improve our customer service significantly' lacks specificity, making it difficult for the operations director and management to understand exactly what needs to be achieved and how to plan for it.

10. Correct Answer: C. Legal requirements

- **Explanation:** Financial accounting, especially for limited companies, must follow accounting standards and company law, making it subject to legal requirements. Management accounting, however, has no such external legal requirements, allowing its format and content to be decided internally based on usefulness to management.

Accounting for Materials

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Precision Parts Ltd uses the Weighted Average Cost (AVCO) method for inventory valuation.

- On 1 May, opening inventory was 200 units at £10 each.
- On 5 May, 300 units were purchased at £12 each.
- On 10 May, 400 units were issued to production.
- On 15 May, 100 units were purchased at £13 each.

What is the value of the closing inventory on 31 May? Round to two decimal places.

- **A.** £1,120.00
- **B.** £2,200.00
- **C.** £2,600.00
- **D.** £2,420.00

Question 2

Bulk Buyers Inc. has an annual demand of 10,000 units for a specific raw material. The cost to place an order is £50, and the annual holding cost per unit is £2. The standard purchase price is £10 per unit. The supplier offers a 5% discount on the purchase price if orders are placed in quantities of 2,000 units or more.

If **Bulk Buyers Inc.** decides to take advantage of the bulk discount, what would be the total annual inventory cost (purchase, holding, and ordering costs)? Round to the nearest whole number.

- **A.** £101,414
- **B.** £100,250
- **C.** £97,000
- **D.** £97,250

Question 3

A manufacturing company, **MetalWorks plc**, uses 20,000 kg of a specific raw material annually. The cost to place an order is £100, and the annual holding cost per kg is £0.50. The purchasing manager wants to

determine the optimal order quantity to minimise total inventory costs. Round your answer to the nearest whole kg.

What is the Economic Order Quantity (EOQ) for this raw material?

- **A.** 4,000 kg
- **B.** 2,828 kg
- **C.** 1,000 kg
- **D.** 2,000 kg

Question 4

TechGadgets Ltd uses the FIFO method for valuing its inventory of microchips. In a period of consistently rising purchase prices for these microchips, the company's management is reviewing the impact of this valuation method on its financial statements. They are particularly interested in how it affects reported profit and the value of closing inventory.

In a period of rising prices, how does the FIFO method typically affect TechGadgets Ltd's reported profit and the value of its closing inventory?

- **A.** Lower reported profit and lower closing inventory value.
- **B.** Higher reported profit and higher closing inventory value.
- **C.** Lower reported profit and higher closing inventory value.
- **D.** Higher reported profit and lower closing inventory value.

Question 5

At **CustomFurniture Makers**, a new production system has been introduced where components for a specific furniture piece are only manufactured or ordered from suppliers once a customer order for that piece has been confirmed. This approach aims to minimise work-in-progress and finished goods inventory, aligning with modern efficiency practices. The production manager oversees this new operational flow.

The production system implemented at **CustomFurniture Makers** is an example of which type of inventory management system?

- **A.** A reorder level system.
- **B.** An Economic Order Quantity (EOQ) system.
- **C.** A push system.
- **D.** A Just In Time (JIT) 'pull' system.

Question 6

GreenLeaf Nurseries Ltd, a large plant wholesaler, maintains significant quantities of various plants and gardening supplies in its warehouses. The management team believes this approach helps them manage unexpected surges in customer demand, especially during peak seasons like spring. Additionally, by buying in bulk, they often secure better prices from their suppliers, contributing to their overall profit margins. They also ensure that specialist soils and fertilisers are always available to avoid any delays in their potting and cultivation processes.

Which of the following is **NOT** a reason for GreenLeaf Nurseries Ltd to hold inventory, according to sound inventory management principles?

- **A.** To act as a buffer against high consumption.
- **B.** To capitalise on price fluctuations.
- **C.** To minimise the opportunity cost of capital tied up.
- **D.** To take advantage of quantity discounts.

Question 7

The production manager at **Speedy Deliveries Ltd** regularly receives a report detailing the total number of parcels processed by each sorting machine operator over the last 24 hours. This report is compiled from individual scan events recorded as parcels move through the system. The manager uses this information to monitor daily performance and identify any immediate operational bottlenecks.

The system generating this report for the production manager is best described as which type of information system?

- **A.** A Just In Time (JIT) system.
- **B.** A Management Information System (MIS).
- **C.** A Transaction Processing System (TPS).
- **D.** An Economic Order Quantity (EOQ) system.

Question 8

ElectroComponents Ltd uses 10,000 units of a specific circuit board annually. Each order placed for these circuit boards incurs a clerical and administrative cost of £50. The company typically places orders for 1,000 units at a time. The purchasing department is evaluating the efficiency of its ordering process.

What is the total annual ordering cost for these circuit boards?

- **A.** £250
- **B.** £5,000

- **C.** £1,000
- **D.** £500

Question 9

In **FashionFabrics Ltd**, 200 metres of a specific fabric were identified as damaged and unusable during a routine quality check. The management decided to write off this material as it could not be returned to the supplier or used in production. The company's accounting department needs to process this write-off correctly.

How should the write-off of the damaged fabric be recorded in the Material Inventory Account?

- **A.** As a debit entry, increasing inventory.
- **B.** As a credit entry, decreasing inventory and transferred to Work-in-progress (WIP).
- **C.** As a debit entry, increasing inventory and transferred to the Production Overhead Account.
- **D.** As a credit entry, decreasing inventory and transferred to the Statement of profit or loss.

Question 10

Just-In-Time Innovations is considering implementing a full JIT system. The management is evaluating the necessary conditions and characteristics for successful adoption.

Which of the following is a key characteristic or requirement for a full Just In Time (JIT) system?

- **A.** Requiring production processes grouped by product line and a simple information system.
- **B.** Operating as a 'push' system where production is based on forecasts.
- **C.** Maintaining large buffer inventories of raw materials and finished goods.
- **D.** Prioritizing cost reduction over quality improvement.

Answer Key and Explanations

1. Correct Answer: D. £2,420.00

- **Explanation:**
    1. Opening inventory (1 May): 200 units @ £10 = £2,000.
    2. Purchase (5 May): 300 units @ £12 = £3,600.
    3. Total before issue: 500 units (200+300) with total value £5,600 (£2,000+£3,600). Average cost = £5,600 / 500 = £11.20.
    4. Issue (10 May): 400 units. Cost of issue = 400 x £11.20 = £4,480.

5. Remaining inventory: 100 units (500-400) with value £1,120 (£5,600-£4,480).
6. Purchase (15 May): 100 units @ £13 = £1,300.
7. Closing inventory: 200 units (100+100) with total value £2,420 (£1,120+£1,300). The average cost for the remaining 200 units is £12.10 (£2,420/200).

2. Correct Answer: D. £97,250

- **Explanation:** First, calculate the total cost at the Economic Order Quantity (EOQ). EOQ = √((2x10,000x£50) / £2) = 707 units. Total cost at EOQ = (10,000x£10) + ((707/2)x£2) + ((10,000/707)x£50) = £100,000 + £707 + £707 = £101,414. Next, calculate the total cost if the discount is taken by ordering 2,000 units. Discounted purchase price = £10 x 0.95 = £9.50. Total cost at 2,000 units = (10,000x£9.50) + ((2,000/2)x£2) + ((10,000/2,000)x£50) = £95,000 + £2,000 + £250 = £97,250. Since £97,250 is lower than £101,414, the company should take the discount.

3. Correct Answer: B. 2,828 kg

- **Explanation:** The Economic Order Quantity (EOQ) formula is √((2 × D × Co) / Ch), where D is annual demand, Co is the ordering cost per order, and Ch is the holding cost per unit. Plugging in the values: √((2 × 20,000 × £100) / £0.50) = √(£4,000,000 / £0.50) = √(8,000,000) = 2,828.427 kg. Rounded to the nearest whole kg, the EOQ is 2,828 kg. This calculation helps purchasing management minimize total inventory costs.**4. Correct Answer: B. Higher reported profit and higher closing inventory value.**

- **Explanation:** The FIFO (First In First Out) method assumes materials are issued in the order received. In a period of rising prices, this means older, lower-cost items are assumed to be issued first, resulting in a lower cost of goods sold. This leads to a higher reported profit. Consequently, the inventory remaining (closing inventory) is valued at the more recent, higher purchase prices, resulting in a higher closing inventory value on the financial statement.

5. Correct Answer: D. A Just In Time (JIT) 'pull' system.

- **Explanation:** A Just In Time (JIT) system is a 'pull' system, meaning products or components are not produced until requested by the customer or the next production stage. This contrasts with a 'push' system where production is based on forecasts. The scenario describes production triggered by a customer order, which is characteristic of a JIT 'pull' system, aiming for minimal inventory and efficient operational management.

6. Correct Answer: C. To minimise the opportunity cost of capital tied up.

- **Explanation:** Reasons for holding inventory include acting as a buffer against high consumption, taking advantage of quantity discounts, capitalising on price fluctuations, minimising production delays, and satisfying technical needs. The opportunity cost of capital tied up is a holding cost, not a reason for holding inventory; rather, it is a cost incurred by holding inventory that management seeks to control.

7. Correct Answer: B. A Management Information System (MIS).

- **Explanation:** Management Information Systems (MIS) convert data into useful information for managers at all levels for planning and controlling activities. The report collates low-level transaction

data (individual scan events) to provide useful information (total parcels processed by operator) for the production manager to monitor operational performance.

8. Correct Answer: D. £500

- **Explanation:** The total annual ordering cost is calculated by multiplying the cost per order by the number of orders placed annually. The number of orders is the annual demand (10,000 units) divided by the order quantity (1,000 units), which is 10 orders. Therefore, £50 per order × 10 orders = £500. This is a crucial cost for the purchasing function.

9. Correct Answer: D. As a credit entry, decreasing inventory and transferred to the Statement of profit or loss.

- **Explanation:** In the Material Inventory Account, credit entries decrease inventory. Material write-offs are recorded as a credit entry to the Material Inventory Account, decreasing the inventory balance, and are then transferred to the Statement of profit or loss. This accurately reflects the loss of material for management and financial reporting.

10. Correct Answer: A. Requiring production processes grouped by product line and a simple information system.

- **Explanation:** A full Just In Time (JIT) system is characterized by a 'pull' system, minimal inventory levels, continuous improvement, and often requires specific organizational structures like production processes grouped by product line and simple, infallible information systems (e.g., Kanban) to manage the flow efficiently.

Accounting for Overheads

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Zeta Products has two production cost centres: Machining (machine-intensive) and Assembly (labour-intensive).

- Machining department: Budgeted overheads £120,000, Budgeted machine hours 20,000.
- Assembly department: Budgeted overheads £90,000, Budgeted direct labour hours 15,000.

Product X requires 3 machine hours and 2 direct labour hours. Product Y requires 1 machine hour and 4 direct labour hours.

What is the total absorbed overhead cost for one unit of Product X and one unit of Product Y combined?

- **A.** £72
- **B.** £60
- **C.** £66
- **D.** £54

Question 2

Xi Corporation is reviewing its cost structure. For a particular production run, the following costs were identified:

- Raw materials used: £45,000
- Wages of assembly line workers: £30,000
- Factory supervisor's salary: £12,000
- Depreciation of factory machinery: £8,000
- Specialized tooling purchased for this specific production run: £5,000
- Factory utility costs: £7,000

What is the total prime cost for this production run?

- **A.** £102,000
- **B.** £92,000
- **C.** £75,000
- **D.** £80,000

Question 3

Alpha Manufacturing Ltd uses a machine hour rate to absorb overheads in its Machining department. The budgeted production overheads for the year were £180,000, based on 30,000 budgeted machine hours. During the year, actual production overheads incurred were £195,000, and actual machine hours worked were 32,000.

What was the amount of under or overabsorption of overheads for the year?

- **A.** £15,000 overabsorption
- **B.** £15,000 underabsorption
- **C.** £3,000 overabsorption
- **D.** £3,000 underabsorption

Question 4

Iota Industries calculated an underabsorption of overheads amounting to £15,000 at the end of its financial year. The company's initial Statement of Profit or Loss showed a net profit of £250,000 before accounting for this underabsorption.

What will be the adjusted net profit after accounting for the underabsorption of overheads?

- **A.** £15,000
- **B.** £265,000
- **C.** £250,000
- **D.** £235,000

Question 5

Scenario: Two service cost centres, Maintenance and Canteen, provide services to each other and to two production cost centres, Assembly and Machining. The total overheads for Maintenance are £50,000 and for Canteen are £30,000 before reapportionment. Maintenance provides 20% of its services to Canteen and 80% to production. Canteen provides 10% of its services to Maintenance and 90% to production.

Which method is most appropriate for reapportioning the service cost centre costs in this scenario?

- **A.** Direct Method
- **B.** Allocation Method
- **C.** Reciprocal Reapportionment Method
- **D.** Step Down Method

Question 6

Delta Engineering operates a factory with two production departments, Assembly and Finishing, and one service department, Maintenance. The factory incurs several overheads:

- Indirect materials for Assembly: £5,000
- Indirect materials for Finishing: £3,000
- Factory rent: £20,000 (total factory area 1,000 sq m; Assembly 400 sq m, Finishing 300 sq m, Maintenance 300 sq m)
- Machine depreciation: £15,000 (total carrying amount of machinery £150,000; Assembly £80,000, Finishing £70,000)

Which of the following statements correctly describes the treatment of these overheads in Stage 1 of absorption costing?

- **A.** Indirect materials are apportioned, while factory rent and machine depreciation are allocated.
- **B.** All listed overheads are allocated directly to the respective departments.
- **C.** Indirect materials are allocated, factory rent is apportioned based on floor area, and machine depreciation is apportioned based on carrying amount.
- **D.** All listed overheads are apportioned using a single basis like total floor area.

Question 7

Gamma Industries has two service cost centres, S1 and S2, and two production cost centres, P1 and P2. The overheads for S1 are £40,000 and for S2 are £30,000. S1 provides services to S2 (20%), P1 (50%), and P2 (30%). S2 provides services to P1 (60%) and P2 (40%). Gamma Industries uses the Step-Down method, reapportioning S1 first.

What is the total overhead cost reapportioned from S2 to P1 after S1's costs have been reapportioned? Round to the nearest whole number.

- **A.** £18,000
- **B.** £24,000
- **C.** £22,800
- **D.** £30,000

Question 8

FreshBake Bakeries is preparing its inventory valuation for its financial statements. The company incurred costs for flour, sugar, direct labour for baking, and factory rent. Additionally, due to a power outage, a batch of

bread was spoiled and had to be discarded (abnormal waste). The company also incurred costs for storing finished goods in a warehouse for an extended period due to low demand (unnecessary storage costs).

According to IAS 2, which of the following costs should be excluded from the cost of inventory for FreshBake Bakeries?

- **A.** Direct labour for baking
- **B.** Flour and sugar
- **C.** Abnormal waste
- **D.** Factory rent

Question 9

CleanAir Systems Ltd operates a factory producing air purification units. During the last quarter, the company incurred the following costs: direct materials for 1,000 units £50,000, factory heating and lighting £8,000, wages of assembly line workers £30,000, depreciation of factory machinery £12,000, and administrative office rent £6,000.

Which of the following represents a production overhead for CleanAir Systems Ltd?

- **A.** Direct materials for 1,000 units
- **B.** Depreciation of factory machinery
- **C.** Wages of assembly line workers
- **D.** Administrative office rent

Question 10

Beta Products Co is preparing its inventory valuation for the year-end. The company incurred various costs, including direct materials, direct labour, factory rent, administrative salaries for the CEO's office, and costs associated with abnormal spoilage during production.

According to IAS 2, which of the following costs should be excluded when valuing inventory?

- **A.** Direct materials and direct labour
- **B.** Administrative salaries for the CEO's office and costs associated with abnormal spoilage
- **C.** Factory rent and administrative salaries for the CEO's office
- **D.** Factory rent and costs associated with abnormal spoilage

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Answer Key and Explanations

1. Correct Answer: B. £60

- **Explanation:** First, calculate the Overhead Absorption Rate (OAR) for each department. For Machining, OAR is £120,000 / 20,000 machine hours = **£6 per machine hour**. For Assembly, OAR is £90,000 / 15,000 direct labour hours = **£6 per direct labour hour**. Then, calculate the absorbed overheads for each product: Product X: (3 MH x £6) + (2 DLH x £6) = £18 + £12 = **£30**. Product Y: (1 MH x £6) + (4 DLH x £6) = £6 + £24 = **£30**. The combined absorbed overhead cost for one unit of Product X and one unit of Product Y is £30 + £30 = **£60**.

2. Correct Answer: D. £80,000

- **Explanation:** Prime cost consists of direct materials, direct labour, and direct expenses. Raw materials used (£45,000) are direct materials. Wages of assembly line workers (£30,000) are direct labour. Specialized tooling purchased for this specific production run (£5,000) is a direct expense. The sum of these is £45,000 + £30,000 + £5,000 = **£80,000**. The other costs (factory supervisor's salary, depreciation, factory utility costs) are indirect costs or production overheads.

3. Correct Answer: D. £3,000 underabsorption

- **Explanation:** The Overhead Absorption Rate (OAR) is calculated as budgeted overheads divided by budgeted activity (£180,000 / 30,000 hours = **£6 per machine hour**). Overheads absorbed are then calculated by multiplying the OAR by the actual activity (£6/hour x 32,000 hours = **£192,000**). Since the actual overheads incurred (£195,000) are greater than the overheads absorbed (£192,000), there is an **underabsorption of £3,000** (£195,000 - £192,000).

4. Correct Answer: D. £235,000

- **Explanation:** Underabsorption of overheads means that the actual overheads incurred were greater than the overheads absorbed into production. This implies that the cost of goods sold was understated, and consequently, profit was overstated. To correct this, the underabsorbed amount is written off to the Statement of Profit or Loss, reducing the reported profit. Therefore, the adjusted net profit will be £250,000 - £15,000 = **£235,000**.

5. Correct Answer: C. Reciprocal Reapportionment Method

- **Explanation:** When service cost centres provide services to each other, a reciprocal relationship exists. The Reciprocal Reapportionment Method (also known as Repeated Distribution or Equations Method) is designed to account for these inter-service centre charges, ensuring that the total cost of each service centre, including services received from other service centres, is fully distributed to production cost centres.

6. Correct Answer: C. Indirect materials are allocated, factory rent is apportioned based on floor area, and machine depreciation is apportioned based on carrying amount.

- **Explanation:** Indirect materials specifically identified with Assembly and Finishing are **allocated** directly to those centres. Factory rent, relating to multiple cost centres, must be **apportioned** using a fair basis, such as floor area. Machine depreciation, also relating to multiple cost centres, should be **apportioned** based on the carrying amount of non-current assets in each centre, as this reflects the asset usage.

7. Correct Answer: C. £22,800

- **Explanation:** In the Step-Down method, the first service centre (S1) is reapportioned to all other centres, including other service centres (S2) and production centres (P1, P2). S1 reapportions 20% of its £40,000 overheads **(£8,000)** to S2. S2's total overheads then become its initial £30,000 plus the £8,000 from S1, totalling **£38,000**. S2 then reapportions 60% of this new total (£38,000) to P1, which is **£22,800**.

8. Correct Answer: C. Abnormal waste

- **Explanation:** IAS 2 requires inventory cost to include conversion costs and other costs incurred to bring the inventory to its present location and condition. Excluded costs under IAS 2 include **abnormal waste**, unnecessary storage costs, administrative overheads that don't relate to bringing inventory to its present condition, and selling costs. Therefore, abnormal waste should be excluded.

9. Correct Answer: B. Depreciation of factory machinery

- **Explanation:** Production overheads are costs incurred within the factory environment that cannot be directly identified with a single cost unit. **Depreciation of factory machinery** is an indirect expense related to the production process, making it a production overhead. Direct materials and wages of assembly line workers are direct costs. Administrative office rent is not a factory cost.

10. Correct Answer: B. Administrative salaries for the CEO's office and costs associated with abnormal spoilage

- **Explanation:** Inventory cost, according to accounting standards, includes conversion costs and other costs incurred to bring the inventory to its present location and condition. Costs such as administrative overheads that do not relate to bringing inventory to its present condition (like CEO's office salaries) and **abnormal waste** are specifically excluded from inventory cost.

Alternative Costing Principles

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Precision Parts Ltd manufactures two types of components, Alpha and Beta. The company has identified the following overhead costs and cost drivers for the upcoming period:

Activity	Overhead Cost (£)	Cost Driver	Total Driver Volume
Machine Setup	60,000	Number of production runs	200 runs
Quality Inspection	40,000	Number of inspections	800 inspections
Material Handling	50,000	Number of material movements	1,000 movements

Product Alpha requires 10 production runs, 150 inspections, and 190 material movements. Product Beta requires 15 production runs, 250 inspections, and 300 material movements. The company produces 1,000 units of Alpha and 500 units of Beta.

Using *Activity Based Costing (ABC)*, what is the total overhead cost allocated to **Product Alpha** for the period?

- **A.** £15,000
- **B.** £25,000
- **C.** £30,000
- **D.** £20,000

Question 2

Innovate Appliances uses *Activity Based Costing (ABC)* to accurately determine the cost of its various kitchen appliances. The company is now planning to introduce a new smart oven and has adopted a *Target Costing* approach, aiming for a specific market price and desired profit margin. Initial ABC analysis reveals that 'customer support' and 'software updates' are significant overhead activities for smart products.

How can **Innovate Appliances** best leverage its ABC insights to achieve the new smart oven's target cost?

- **A.** By using ABC to reclassify all fixed costs as direct costs, thereby reducing the target cost.
- **B.** By using ABC to justify a higher competitive market price for the smart oven.
- **C.** By focusing on managing the cost drivers for activities like customer support and software updates to reduce their consumption.
- **D.** By treating all pre-production costs as period expenses, as suggested by ABC.

Question 3

Global Logistics Ltd, a freight forwarding company, is reviewing its cost allocation methods. They currently use traditional absorption costing, allocating administrative overheads based on the number of shipments. However, they have identified that activities like customs documentation and special handling requests consume resources disproportionately to simple shipment volume.

How does Activity Based Costing (ABC) fundamentally differentiate itself from traditional absorption costing in its approach to allocating overheads, which could benefit Global Logistics Ltd?

- **A.** ABC allocates overheads based on direct labour hours, similar to traditional methods.
- **B.** ABC uses activities to group costs rather than departments, absorbing costs using cost drivers instead of purely volume-based measures.
- **C.** ABC ignores all non-production overheads, focusing only on manufacturing costs.
- **D.** ABC treats all overheads as period expenses, making them irrelevant for product costing.

Question 4

Artisan Crafts Co. produces two types of handmade pottery: simple mugs (high volume, low complexity) and intricate vases (low volume, high complexity). The company has significant overheads related to design, quality checks, and specialized tooling, which are not directly proportional to production volume. Currently, Artisan Crafts uses traditional *Absorption Costing (AC)*, allocating overheads based on direct labour hours.

If **Artisan Crafts Co.** were to switch from traditional AC to *Activity Based Costing (ABC)*, how would the reported cost per unit for the intricate vases likely change, and why?

- **A.** Remain the same, as ABC is just a different way of presenting the same total overheads.
- **B.** Decrease, because ABC would treat more overheads as period costs.
- **C.** Increase, because ABC would more accurately assign non-volume related overheads consumed by complex products.
- **D.** Decrease, because ABC would allocate less overhead to low-volume products.

Question 5

Automated Solutions Plc, a modern manufacturing firm in Coventry, has heavily invested in advanced robotics and automated production lines. As a result, their direct labour costs have significantly decreased, while indirect costs related to machine maintenance, software licenses, and quality control have substantially increased. The finance team finds that traditional costing methods are providing less relevant product cost information.

Why do traditional costing methods, such as absorption costing and marginal costing, struggle to provide accurate product costs in modern production environments like Automated Solutions Plc?

- **A.** They are primarily designed for service industries, not manufacturing.
- **B.** They are too complex to implement in automated environments.
- **C.** Absorption Costing often allocates overheads arbitrarily based on volume, and Marginal Costing treats large fixed costs as irrelevant period charges.
- **D.** They only consider direct costs and ignore all indirect costs.

Question 6

InnovateTech Ltd, a UK manufacturing company, produces a range of high-tech electronic gadgets. Historically, InnovateTech has used traditional absorption costing, allocating overheads based on direct labour hours. However, the management has observed that a significant portion of their overheads, such as quality control inspections and machine setups, are not directly proportional to production volume. They are considering implementing a new costing system to gain a more accurate understanding of product costs and improve cost control.

Which modern cost management technique would best address InnovateTech Ltd's concerns about non-volume related overheads and provide more accurate product cost information?

- **A.** Life Cycle Costing
- **B.** Marginal Costing
- **C.** Activity Based Costing
- **D.** Target Costing

Question 7

Digital Dreams Ltd, a software development company in Edinburgh, has just launched a new gaming application. Traditionally, their accounting system treats all pre-production costs, such as the initial concept design, software development, and marketing campaign expenses incurred before launch, as period expenses. The finance manager is exploring life cycle costing.

How does life cycle costing differentiate its treatment of pre-production costs like research and development, design, and marketing compared to traditional management accounting?

- **A.** It allocates these costs arbitrarily across all products based on sales volume.
- **B.** It treats them as assets on the balance sheet until the product is sold.
- **C.** It ignores these costs entirely as they are not direct production costs.
- **D.** It traces these costs to individual products over their entire life cycle to aid comparison with revenues.

Question 8

Solar Solutions Ltd is evaluating a new solar panel model. The estimated costs and revenues over its *entire life cycle* are as follows:

Life Cycle Stage	**Cost/Revenue (£)**
Research and Development (R&D)	(£1,500,000)
Design and Prototyping	(£800,000)
Production and Manufacturing	(£3,000,000)
Marketing and Distribution	(£700,000)
Sales Revenue	£7,000,000
Customer Service and Warranty	(£400,000)
Decommissioning/Disposal	(£100,000)

What is the total *life cycle profit* for the new solar panel model?

- **A.** £800,000
- **B.** £500,000
- **C.** £600,000
- **D.** £700,000

Question 9

Software Solutions UK is evaluating the profitability of its flagship enterprise software product, which has been on the market for five years. The finance team is considering using life cycle costing to get a comprehensive view.

What does life cycle costing involve tracking and accumulating for a product like Software Solutions UK's enterprise software?

- **A.** Only the research and development costs incurred before the product launch.
- **B.** Only the direct production costs incurred during the current financial year.
- **C.** All costs and revenues attributed to the product over its entire life cycle, from inception to abandonment.
- **D.** Only the marketing and sales expenses incurred after the product launch.

Question 10

Global Gadgets Inc. manufactures a range of electronic accessories. Historically, it has used traditional *Absorption Costing (AC)*, allocating all overheads based on direct machine hours. However, a significant portion of its overheads relates to quality control and product testing, which are driven by the number of batches produced, not machine hours.

How does *Activity Based Costing (ABC)* primarily overcome the limitations of **Global Gadgets Inc.'s** traditional AC system in this scenario?

- **A.** By focusing only on direct costs for product valuation.
- **B.** By treating all fixed overheads as period costs.
- **C.** By absorbing overheads purely on a volume basis.
- **D.** By allocating overheads to cost pools based on activities and then using appropriate cost drivers.

Answer Key and Explanations

1. Correct Answer: D. £20,000

- **Explanation:** First, calculate the cost driver rates:
  Machine Setup rate = £60,000 / 200 runs = **£300 per run**
  Quality Inspection rate = £40,000 / 800 inspections = **£50 per inspection**
  Material Handling rate = £50,000 / 1,000 movements = **£50 per movement**
  Then, allocate overheads to Product Alpha:
  Machine Setup: 10 runs x £300/run = £3,000
  Quality Inspection: 150 inspections x £50/inspection = £7,500
  Material Handling: 190 movements x £50/movement = £9,500
  Total overhead cost for Product Alpha = £3,000 + £7,500 + £9,500 = **£20,000**.

2. Correct Answer: C. By focusing on managing the cost drivers for activities like customer support and software updates to reduce their consumption.

- **Explanation:** Activity Based Costing (ABC) provides better insight into the causes of overhead costs by identifying specific activities and their cost drivers. To achieve a target cost, management needs to find ways to reduce costs. By understanding the cost drivers for significant activities like customer support and software updates, Innovate Appliances can focus on managing these drivers (e.g., improving product reliability to reduce support calls, optimizing software development processes) to effectively reduce overheads and meet the target cost.

3. Correct Answer: B. ABC uses activities to group costs rather than departments, absorbing costs using cost drivers instead of purely volume-based measures.

- **Explanation:** Activity Based Costing (ABC) differentiates itself from traditional absorption costing by moving away from absorbing overheads purely on a volume basis. Instead, ABC uses **activities** to group costs rather than departments, which reduces the need for arbitrary apportionments. Costs are then absorbed into units using **cost drivers**, which are factors influencing the level of cost or units of activity

that consume resources, leading to more accurate cost calculations, especially where costs are non-volume related.

4. Correct Answer: C. Increase, because ABC would more accurately assign non-volume related overheads consumed by complex products.

- **Explanation:** Traditional Absorption Costing often undercosts low-volume, high-complexity products and overcosts high-volume, low-complexity products when a significant proportion of overheads are non-volume related. Activity Based Costing (ABC) would more accurately assign these non-volume related overheads (like design, quality checks, specialized tooling) to the intricate vases based on their actual consumption of activities, leading to an **increase** in their reported cost per unit.

5. Correct Answer: C. Absorption Costing often allocates overheads arbitrarily based on volume, and Marginal Costing treats large fixed costs as irrelevant period charges.

- **Explanation:** Modern production environments, with greater use of machinery and computers, lead to more indirect costs (overheads) and less direct labour costs. Traditional costing struggles because Absorption Costing (AC) often allocates overheads arbitrarily based on volume, and Marginal Costing (MC) treats fixed costs (which may be large and not truly fixed) as period charges, making them seem irrelevant for product cost. This leads to less accurate product cost information.

6. Correct Answer: C. Activity Based Costing

- **Explanation:** Activity Based Costing (ABC) is designed to overcome the limitations of traditional absorption costing by moving away from absorbing overheads purely on a volume basis. It allocates overheads to cost pools based on activities and then absorbs them into units using cost drivers, leading to more accurate product cost calculations, especially where a large proportion of costs are non-volume related, which aligns with InnovateTech Ltd's situation.

7. Correct Answer: D. It traces these costs to individual products over their entire life cycle to aid comparison with revenues.

- **Explanation:** Traditional management accounting often treats pre-production costs like research and development (R&D), design, and marketing as period expenses. Life cycle costing, however, differentiates by tracking and accumulating all costs and revenues attributed to a product over its entire life cycle, from inception to abandonment, **tracing these costs to individual products** to aid comparison with revenues generated in later periods.

8. Correct Answer: B. £500,000

- **Explanation:** To calculate the total life cycle profit, sum all costs and subtract them from the total sales revenue.
  Total Costs = R&D + Design + Production + Marketing + Customer Service + Decommissioning
  Total Costs = £1,500,000 + £800,000 + £3,000,000 + £700,000 + £400,000 + £100,000 = **£6,500,000**
  Total Sales Revenue = **£7,000,000**
  Life Cycle Profit = Total Sales Revenue - Total Costs = £7,000,000 - £6,500,000 = **£500,000**.

9. Correct Answer: C. All costs and revenues attributed to the product over its entire life cycle, from inception to abandonment.

- **Explanation:** Life cycle costing involves tracking and accumulating **all costs and revenues** attributed to a product over its entire life cycle, from inception (planning/concept design) to abandonment. This comprehensive approach allows for a full understanding of the product's profitability over its lifespan, including pre-production costs like research and development and design, as well as production, marketing, and post-sale costs.

10. Correct Answer: D. By allocating overheads to cost pools based on activities and then using appropriate cost drivers.

- **Explanation:** Activity Based Costing (ABC) overcomes the limitations of traditional Absorption Costing by moving away from absorbing overheads purely on a volume basis. Instead, it allocates overhead costs to **cost pools** (defined as activities that consume resources) and then absorbs these costs into units using specific **cost drivers** that reflect the actual consumption of resources, such as the number of batches for quality control.

Analysing Data

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

A manufacturing company, **Alpha Ltd**, recorded the number of defects found per batch of products over a month. The data was grouped into the following frequency distribution:

Number of defects per batch	Number of batches (Frequency)
0-2	10
3-5	15
6-8	5

Using class midpoints, what is the approximated *mean* number of defects per batch for **Alpha Ltd**? Round your answer to two decimal places.

- **A.** 3.00
- **B.** 3.25
- **C.** 3.50
- **D.** 3.75

Question 2

A small start-up, **InnovateX**, has five employees with annual salaries of £30,000, £35,000, £40,000, £45,000, and the CEO's salary of £200,000. The company wants to present an 'average' salary that best represents the typical employee's earnings, avoiding distortion from the CEO's high salary.

Which *measure of central tendency* would be most appropriate in this scenario to represent the typical salary?

- **A.** Median
- **B.** Expected Value
- **C.** Mean
- **D.** Mode

Question 3

Global Ventures Plc is considering a one-off, high-stakes investment in a new market. The financial analysis shows a very high *Expected Value*, indicating a strong long-run average return. However, there is a significant probability of a substantial loss that could severely impact the company's financial stability.

Which key limitation of *Expected Value* should **Global Ventures Plc** be most concerned about in this specific decision-making context?

- **A.** It does not account for the decision-maker's attitude to risk.
- **B.** It requires precise probability estimates, which may be difficult to obtain.
- **C.** It is primarily meaningful for repeated decisions, not one-off decisions.
- **D.** It only considers financial outcomes and ignores non-financial factors.

Question 4

MegaCorp is evaluating a significant capital investment project with a high *Expected Value*, suggesting a profitable long-run average. However, the project involves novel technology with a 20% chance of complete failure, leading to a substantial financial loss that could jeopardize the company's credit rating. The board is generally risk-averse.

Beyond the calculated *Expected Value*, what critical aspect should the board consider before making a final decision on this project?

- **A.** The middle value of the project's financial outcomes when ordered.
- **B.** The decision-maker's attitude to risk and the impact of potential losses.
- **C.** The arithmetic average of the project's potential outcomes.
- **D.** The most frequent financial outcome of the project.

Question 5

A survey on customer satisfaction for **ConnectTel** revealed that the *mean* satisfaction score was 7.2, the *median* score was 8.0, and the *mode* was 8.5. The scores ranged from 1 to 10.

Based on these measures of central tendency, what can be inferred about the distribution of customer satisfaction scores?

- **A.** The distribution is skewed to the right (positively skewed).
- **B.** The distribution is symmetrical, indicating a normal distribution.
- **C.** The data is bimodal, with two distinct peaks.
- **D.** The distribution is skewed to the left (negatively skewed).

Question 6

TechInnovate Ltd is evaluating two potential projects, Project A and Project B, with the following financial characteristics:

Project	Mean Annual Return (£)	Standard Deviation (£)
Project A	150,000	30,000
Project B	250,000	40,000

Which project has a lower relative variability or risk, as measured by the *Coefficient of Variation*? Round your calculations to two decimal places.

- **A.** Project B, with a Coefficient of Variation of 16.00%
- **B.** Project A, with a Coefficient of Variation of 20.00%
- **C.** Project B, with a Coefficient of Variation of 6.25%
- **D.** Project A, with a Coefficient of Variation of 5.00%

Question 7

InvestCo is comparing two investment portfolios, Portfolio X and Portfolio Y, over the last five years. Portfolio X has a *mean* annual return of 10% with a *Coefficient of Variation* of 0.8. Portfolio Y has a *mean* annual return of 15% with a *Coefficient of Variation* of 0.6.

Based on these figures, which statement accurately describes the relative risk of the two portfolios?

- **A.** Portfolio X is riskier than Portfolio Y because it has a higher Coefficient of Variation.
- **B.** Portfolio Y is riskier than Portfolio X because its mean return is higher.
- **C.** Portfolio X is riskier than Portfolio Y because its mean return is lower.
- **D.** Portfolio Y is riskier than Portfolio X because it has a lower Standard Deviation.

Question 8

A market research firm collected data on the ages of 20 customers visiting a new retail store in London. The data was grouped as follows:

Age Group (Years)	Number of Customers
18-25	5
26-35	8

36-45	4
46-55	3

What is the approximate mean age of the customers, to one decimal place?

- **A.** 32.8 years
- **B.** 33.3 years
- **C.** 34.0 years
- **D.** 31.5 years

Question 9

Building on the previous scenario, the financial analyst needs to advise a client on which investment (X or Y) has relatively lower risk. Investment X has a mean annual return of £10,000 and a standard deviation of £2,000 (Coefficient of Variation = 20%). Investment Y has a mean annual return of £15,000 and a standard deviation of £2,500 (Coefficient of Variation = 16.67%).

Based on the Coefficient of Variation, which investment has relatively lower variability or risk, and why?

- **A.** Investment Y, because it has a higher mean return.
- **B.** Investment X, because it has a lower standard deviation.
- **C.** Investment X, because its Coefficient of Variation is higher.
- **D.** Investment Y, because its Coefficient of Variation is lower.

Question 10

A financial analyst at **DataMetrics** is reviewing the volatility of a stock's daily returns. The *variance* of the daily returns for the past year has been calculated as 0.0009.

What is the *standard deviation* of the stock's daily returns? Round your answer to four decimal places.

- **A.** 0.0003
- **B.** 0.0300
- **C.** 0.0030
- **D.** 0.0900

Answer Key and Explanations

1. Correct Answer: C. 3.50

- **Explanation:** To approximate the mean for grouped data, first find the midpoint for each class.
    - For 0-2, the midpoint is **(0+2)/2 = 1**.
    - For 3-5, the midpoint is **(3+5)/2 = 4**.
    - For 6-8, the midpoint is **(6+8)/2 = 7**.
      Then, multiply each midpoint by its frequency, sum these products, and divide by the total frequency.
      ((1 x 10) + (4 x 15) + (7 x 5)) / (10 + 15 + 5)
      = (10 + 60 + 35) / 30
      = 105 / 30 = **3.50**

2. Correct Answer: A. Median

- **Explanation:** The **mean** is heavily influenced by extreme values (outliers), such as the CEO's high salary in this case, which would inflate the 'average' and not represent the typical employee.
  The **mode** is the most frequent value, but with unique salaries, there might not be a mode or it might not be representative. The **median**, which is the middle value when data is arranged in order, is less affected by extreme values and would provide a more representative 'typical' salary in a skewed dataset like this. Expected Value is used for probability distributions, not for summarizing existing data.

3. Correct Answer: C. It is primarily meaningful for repeated decisions, not one-off decisions.

- **Explanation:** A key limitation of Expected Value (EV) is that it represents the long-run average if a decision were repeated many times. For a **one-off, high-stakes investment**, the actual outcome will not be an average; it will be one specific result. Therefore, the company should be concerned that EV is not a reliable predictor of the outcome of a single, unique event, especially when a significant potential loss exists.

4. Correct Answer: B. The decision-maker's attitude to risk and the impact of potential losses.

- **Explanation:** A key limitation of Expected Value (EV) is that it takes no account of the decision-maker's attitude to risk. While EV provides a long-run average, it does not reflect the potential for significant losses or the company's aversion to such risks, especially for a critical, one-off decision. The board, being risk-averse and facing a potential credit rating impact, must consider their risk tolerance and the consequences of the worst-case scenario, which EV alone does not fully capture.

5. Correct Answer: D. The distribution is skewed to the left (negatively skewed).

- **Explanation:** For a normal distribution, the mean, median, and mode are all the same. When they are different, the distribution is skewed. If the mean is less than the median, which is less than the mode **(Mean < Median < Mode)** , the distribution is typically skewed to the left (negatively skewed). In this case, 7.2 (Mean) < 8.0 (Median) < 8.5 (Mode), indicating a left-skewed distribution where there are more high scores, but a tail of lower scores pulls the mean down.

6. Correct Answer: A. Project B, with a Coefficient of Variation of 16.00%

- **Explanation:** The Coefficient of Variation is calculated as (Standard Deviation / Mean) x 100%. A lower Coefficient of Variation indicates lower relative variability or risk.

- For Project A: (30,000 / 150,000) x 100% = 0.20 x 100% = **20.00%**
- For Project B: (40,000 / 250,000) x 100% = 0.16 x 100% = **16.00%**
  Project B has a lower Coefficient of Variation (16.00%) compared to Project A (20.00%), indicating it has lower relative variability or risk.

7. Correct Answer: A. Portfolio X is riskier than Portfolio Y because it has a higher Coefficient of Variation.

- **Explanation:** The Coefficient of Variation is particularly useful for comparing the relative variability or risk of two or more datasets when their means are significantly different. A **higher Coefficient of Variation indicates greater relative variability or risk**. In this case, Portfolio X has a Coefficient of Variation of 0.8, which is higher than Portfolio Y's 0.6. Therefore, Portfolio X is considered riskier in relative terms.

8. Correct Answer: B. 33.3 years

- **Explanation:** For grouped data, the mean is approximated using class midpoints.
  - Midpoints: (18+25)/2 = **21.5**; (26+35)/2 = **30.5**; (36+45)/2 = **40.5**; (46+55)/2 = **50.5**.
    Approximate mean = (21.5x5 + 30.5x8 + 40.5x4 + 50.5x3) / 20
    = (107.5 + 244 + 162 + 151.5) / 20
    = 665 / 20 = 33.25.
    Rounded to one decimal place, the approximate mean age is **33.3 years**.

9. Correct Answer: D. Investment Y, because its Coefficient of Variation is lower.

- **Explanation:** The Coefficient of Variation is particularly useful for comparing the relative variability or risk of two or more datasets when their means are significantly different. A **lower Coefficient of Variation indicates lower relative risk**. Investment Y has a CV of 16.67%, which is lower than Investment X's 20%, indicating lower relative financial risk for decision making.

10. Correct Answer: B. 0.0300

- **Explanation:** The variance is the square of the standard deviation. Therefore, to find the standard deviation, you take the square root of the variance.
  Standard Deviation (σ) = $\sqrt{}$(Variance)
  Standard Deviation = $\sqrt{}$(0.0009)
  Standard Deviation = **0.0300**

Analytical techniques in budgeting and forecasting

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Xi Foods produces three types of ready meals. The management wants to calculate a weighted price index to understand overall price changes for budgeting.

Item	Base Year (Year 1) Price (£)	Base Year (Year 1) Quantity (units)	Current Year (Year 2) Price (£)
Meal A	3.00	10,000	3.30
Meal B	4.00	8,000	4.50
Meal C	2.50	12,000	2.80

Using Year 1 as the base year, calculate the Laspeyre price index for Year 2. Round to two decimal places. Which of the following is correct?

- **A.** 111.52
- **B.** 115.00
- **C.** 113.25
- **D.** 108.70

Question 2

Beta Services Ltd. conducted a regression analysis to understand the relationship between advertising expenditure (independent variable) and sales revenue (dependent variable). The analysis yielded a correlation coefficient (r) of +0.92. The management wants to understand the reliability of this relationship for future forecasting.

Based on the correlation coefficient, what percentage of the change in sales revenue can be explained by the change in advertising expenditure, and what does this imply about the forecast's reliability?

- **A.** 92.00%; The forecast is moderately reliable.
- **B.** 92.00%; The forecast is highly reliable.
- **C.** 84.64%; The forecast is highly reliable.
- **D.** 84.64%; The forecast is unreliable.

Question 3

Theta Holdings operates in several countries and needs to compare the purchasing power of its operational budgets across different periods. Inflation rates vary significantly between regions and over time. The finance department is considering using index numbers for this purpose.

What is the primary purpose of using index numbers in this context for Theta Holdings?

- **A.** To adjust historical or forecast data for price or cost inflation, ensuring figures are compared at a common price level.
- **B.** To establish the correlation between budget expenditure and economic growth.
- **C.** To determine the exact profit margin for each country.
- **D.** To calculate the total value of assets across all operations.

Question 4

Omicron Solutions is investigating the relationship between employee training hours and project success rates. A regression analysis was performed, and the correlation coefficient (*r*) was found to be -0.75.

What does a correlation coefficient of -0.75 indicate about the relationship between employee training hours and project success rates?

- **A.** A weak negative linear relationship.
- **B.** A strong negative linear relationship.
- **C.** No linear relationship.
- **D.** A strong positive linear relationship.

Question 5

Zeta Services uses least squares regression to analyse its operational costs. The resulting equation is y = 25,000 + 12x, where y is the total monthly cost and x is the number of service calls made. The management is trying to understand the cost behaviour implied by this equation.

In this regression equation, what do the values £25,000 and £12 represent in terms of cost behaviour?

- **A.** £25,000 represents variable cost per unit; £12 represents fixed costs.
- **B.** £25,000 represents total variable costs; £12 represents total fixed costs.
- **C.** £25,000 represents total cost; £12 represents total revenue.
- **D.** £25,000 represents fixed costs; £12 represents variable cost per unit.

Question 6

Nu Innovations has developed a regression equation to forecast demand for its new product based on marketing spend. The historical data used to build the model covered marketing spends between £10,000 and £50,000. The marketing director proposes a new campaign with a spend of £100,000, and the finance team uses the existing regression equation to forecast demand.

What type of forecast is the finance team making, and what is the associated risk described in the context?

- **A.** Interpolation; riskier, predicting outside the range of original data.
- **B.** Extrapolation; safer, predicting within the range of original data.
- **C.** Extrapolation; riskier, predicting outside the range of original data.
- **D.** Interpolation; safer, predicting within the range of original data.

Question 7

Mu Corporation is evaluating two different weighted index numbers to measure changes in its raw material costs over time. They are particularly interested in how the choice of weighting factor (base year vs. current year quantities) impacts the index value.

What is the key difference in the weighting factors used by the Laspeyre Index and the Paasche Index?

- **A.** The Laspeyre Index uses average quantities, while the Paasche Index uses median quantities.
- **B.** The Laspeyre Index uses current year quantities as the weighting factor, while the Paasche Index uses base year quantities.
- **C.** The Laspeyre Index uses only prices, while the Paasche Index uses only quantities.
- **D.** The Laspeyre Index uses base year quantity or price as the weighting factor, while the Paasche Index uses current year quantity or price as the weighting factor.

Question 8

Gamma Retail is reviewing its sales data over the past five years to prepare its annual budget. They observe a consistent increase in sales during the holiday season each year, alongside a general upward trend in overall sales volume. However, they also note some unpredictable spikes and dips due to unforeseen events like local festivals or temporary road closures.

Which two components of time series analysis are typically most relevant for Gamma Retail's budgeting process?

- **A.** Trend and Seasonal Variations
- **B.** Cyclical Variations and Residual Variations
- **C.** Trend and Residual Variations
- **D.** Seasonal Variations and Cyclical Variations

Question 9

Xi Enterprises is analysing its long-term sales performance and notices fluctuations that seem to align with broader economic cycles, such as periods of recession and recovery. These fluctuations are not consistent in their length or intensity.

Which component of time series analysis describes these medium-to-long term fluctuations usually associated with economic activity, and why are they often difficult to measure for budgeting purposes?

- **A.** Residual Variations; because they are irregular and unpredictable.
- **B.** Trend; because it is the long-term underlying movement.
- **C.** Seasonal Variations; because they recur over a consistent cycle.
- **D.** Cyclical Variations; because they are often difficult to measure due to inconsistent length.

Question 10

A company, **Alpha Manufacturing**, uses least squares regression analysis to predict its monthly production costs. The established line of best fit is *y = 15,000 + 8x*, where *y* represents the total monthly cost in £ and *x* represents the number of units produced. The historical data used to derive this equation ranged from 1,000 to 1,500 units per month.

If Alpha Manufacturing plans to produce 2,000 units next month, what would be the forecasted total monthly cost, and what type of forecast would this represent?

- **A.** £23,000; extrapolation
- **B.** £31,000; extrapolation
- **C.** £23,000; interpolation
- **D.** £31,000; interpolation

Answer Key and Explanations

1. Correct Answer: A. 111.52

- **Explanation:** The Laspeyre Index uses base year quantity as the weighting factor. It is calculated as (Sum of (Current Year Price × Base Year Quantity) / Sum of (Base Year Price × Base Year Quantity)) × 100.
  Sum (P1Q0) = (£3.30 × 10,000) + (£4.50 × 8,000) + (£2.80 × 12,000) = £33,000 + £36,000 + £33,600 = **£102,600**.
  Sum (P0Q0) = (£3.00 × 10,000) + (£4.00 × 8,000) + (£2.50 × 12,000) = £30,000 + £32,000 + £30,000 = **£92,000**.
  Laspeyre Index = (£102,600 / £92,000) × 100 = **111.52**.

2. Correct Answer: C. 84.64%; The forecast is highly reliable.

- **Explanation:** The coefficient of determination (r^2) explains the percentage of the change in the dependent variable (sales revenue) that is caused by the change in the independent variable (advertising expenditure). Here, $r^2 = (+0.92)^2 = 0.8464$, or **84.64%**. A correlation coefficient close to ±1 indicates a reliable forecast, so +0.92 suggests a **highly reliable** forecast.

3. Correct Answer: A. To adjust historical or forecast data for price or cost inflation, ensuring figures are compared at a common price level.

- **Explanation:** Index numbers are crucial for management understanding and essential for adjusting historical or forecast data to allow for price or cost inflation, thereby ensuring figures are compared at a **common price level**. This allows for meaningful comparisons of purchasing power over time and across different economic environments.

4. Correct Answer: B. A strong negative linear relationship.

- **Explanation:** The correlation coefficient (r) indicates the strength and direction of a linear relationship. A value of -0.75 is close to -1, indicating a **strong negative linear relationship**. This means that as employee training hours increase, project success rates tend to decrease, and vice versa, with a strong degree of consistency.

5. Correct Answer: D. £25,000 represents fixed costs; £12 represents variable cost per unit.

- **Explanation:** In the least squares regression equation y = a + bx, 'a' represents the fixed costs (the cost when x is zero), and 'b' represents the variable cost per unit (the change in cost for each unit change in x). Therefore, **£25,000 represents fixed costs** and **£12 represents the variable cost per service call**.

6. Correct Answer: C. Extrapolation; riskier, predicting outside the range of original data.

- **Explanation:** Forecasting by **extrapolation** involves predicting outside the range of the original data used to create the model. In this case, forecasting demand for a £100,000 marketing spend when the historical data only covered up to £50,000 is extrapolation, which is considered a **riskier** forecasting method.

7. Correct Answer: D. The Laspeyre Index uses base year quantity or price as the weighting factor, while the Paasche Index uses current year quantity or price as the weighting factor.

- **Explanation:** The Laspeyre Index is a weighted index that uses the **base year** quantity or price as the weighting factor. In contrast, the Paasche Index is a weighted index that uses the **current year** quantity or price as the weighting factor. This difference in weighting can lead to different index values.

8. Correct Answer: A. Trend and Seasonal Variations

- **Explanation:** For budgeting, only the **trend** (the long-term underlying movement) and **seasonal variations** (short-term fluctuations that recur over a consistent cycle) are typically relevant. Cyclical factors are too long-term and residual factors are too unpredictable to be reliably included in a budget.

9. Correct Answer: D. Cyclical Variations; because they are often difficult to measure due to inconsistent length.

- **Explanation: Cyclical variations** are medium-to-long term fluctuations usually associated with economic activity. They are often difficult to measure due to their inconsistent length and amplitude, making them less relevant for short-to-medium term budgeting compared to trend and seasonal variations.

10. Correct Answer: B. £31,000; extrapolation

- **Explanation:** The forecasted total monthly cost is calculated as y = 15,000 + (8 x 2,000) = 15,000 + 16,000 = **£31,000**. Since the forecast for 2,000 units is outside the range of the original data (1,000 to 1,500 units), this type of forecast is known as **extrapolation**, which is considered riskier.

Budgeting

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Alpha Manufacturing Ltd initially prepared a budget for 8,000 units of production. At this level, total variable costs were budgeted at £48,000 and total fixed costs at £30,000. Due to unexpected market demand, the company actually produced 9,500 units.

What would be the *flexed budget* for total costs at the actual activity level of 9,500 units?

- **A.** £78,000
- **B.** £90,000
- **C.** £57,000
- **D.** £87,000

Question 2

GreenGrow Farms specialises in organic produce. For the upcoming season, market research indicates a strong demand for their premium tomatoes, suggesting they could sell up to 10,000 kg. However, due to recent adverse weather conditions, the farm's irrigation system can only support the cultivation of enough plants to yield a maximum of 7,000 kg of tomatoes. All other resources, including labour and packaging, are readily available for up to 12,000 kg.

Based on this information, what is the *principal budget factor* for **GreenGrow Farms** for the upcoming season?

- **A.** Sales demand
- **B.** Material availability (irrigation capacity)
- **C.** Labour hours
- **D.** Packaging costs

Question 3

CleanCo Ltd manufactures cleaning products. Its original fixed budget for producing 8,000 litres of a specific solution included variable production costs of £48,000 and fixed production costs of £30,000. Due to unexpected demand, CleanCo Ltd actually produced 9,500 litres.

If CleanCo Ltd were to prepare a flexible budget for the actual activity level of 9,500 litres, what would be the budgeted variable production costs?

- **A.** £30,000
- **B.** £48,000
- **C.** £57,000
- **D.** £78,000

Question 4

FashionForward Apparel is planning its production for the next season. The company has ample access to raw materials and skilled labour, and its production capacity can easily meet any foreseeable demand. However, the fashion market is highly competitive, and the company's ability to sell its products is the main constraint on its operations.

Given this situation, which budget should **FashionForward Apparel** prepare first?

- **A.** Sales budget
- **B.** Production budget
- **C.** Overheads budget
- **D.** Labour budget

Question 5

BrightSpark Electronics projects sales for the next three months as follows: January £150,000, February £180,000, March £160,000. Historically, 70% of sales are cash sales, and 30% are credit sales collected one month after the sale.

What are the total *cash receipts* expected in March?

- **A.** £112,000
- **B.** £166,000
- **C.** £154,000
- **D.** £160,000

Question 6

MediCare Solutions operates several regional clinics. The regional manager for the North clinic is being held accountable for a significant increase in central IT infrastructure costs, which are allocated to all clinics based on patient numbers. The manager has no authority over IT spending decisions or the allocation method. The manager feels unfairly penalised, leading to a noticeable decline in morale and engagement.

According to the principles of *responsibility accounting and controllability*, what is the most likely consequence of holding the North clinic manager accountable for these costs?

- **A.** Increased motivation to reduce IT costs
- **B.** A lowering of morale and dysfunctional behaviour
- **C.** More accurate cost allocation in the future
- **D.** Improved coordination between IT and regional clinics

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Question 7

Dynamic Solutions Inc. uses a *fixed budget* for its production department. In the last quarter, actual production volume was 15% higher than the budgeted volume. When the production manager's performance was evaluated against the fixed budget, it appeared that costs were significantly over budget, even though the manager felt they had managed resources efficiently for the actual output.

Why is the *fixed budget* proving to be a disadvantage for **Dynamic Solutions Inc.** in controlling costs and evaluating performance in this scenario?

- **A.** It ignores non-cash expenses like depreciation.
- **B.** It encourages managers to set easier targets.
- **C.** It is prepared for a single level of activity and remains unchanged regardless of actual volume.
- **D.** It does not align with the organisation's overall mission.

Question 8

AquaPure Water Systems has just completed its quarterly review. The actual sales volume for their premium filtration units was 20% below the budgeted target, significantly impacting revenue. The management team is now meeting to understand the reasons for this shortfall and decide on corrective actions.

In the context of the *budgetary process cycle*, what is the immediate next stage for **AquaPure Water Systems** after monitoring actual outcomes and identifying this divergence?

- **A.** Identifying new organisational objectives
- **B.** Responding to divergences
- **C.** Setting new long-term strategic plans
- **D.** Gathering data about alternative courses of action

Question 9

HomeComforts plc prepared a fixed budget for its production department based on an expected output of 10,000 units for the quarter. At the end of the quarter, the actual output achieved was 12,000 units. The production manager is now reviewing the actual costs against the original fixed budget to assess performance.

Why is comparing the actual costs for 12,000 units directly against the fixed budget for 10,000 units problematic for controlling costs and evaluating the manager's performance?

- **A.** The fixed budget includes non-cash expenses like depreciation.
- **B.** The actual output exceeded the budget, indicating excellent performance regardless of cost variances.
- **C.** The fixed budget does not account for changes in activity volume, making comparisons irrelevant.
- **D.** The fixed budget was prepared using a top-down approach, demotivating the manager.

Question 10

TechGadget Ltd sells electronic devices on credit. For the month of October, budgeted credit sales are £200,000. The company's historical collection pattern shows that 60% of credit sales are collected in the month of sale, 30% in the month following the sale, and 10% in the second month following the sale. September's credit sales were £180,000, and August's credit sales were £150,000.

What is the total budgeted cash receipt from credit sales for TechGadget Ltd in October?

- **A.** £177,000
- **B.** £195,000
- **C.** £189,000
- **D.** £200,000

Answer Key and Explanations

1. Correct Answer: D. £87,000

- **Explanation:** To calculate the flexed budget, first determine the variable cost per unit: £48,000 / 8,000 units = **£6 per unit**. Then, calculate the variable costs for the actual activity level: 9,500 units x £6/unit = **£57,000**. Fixed costs remain constant regardless of the activity level within the relevant range. Therefore, the total flexed budget cost is £57,000 (variable) + £30,000 (fixed) = **£87,000**.

2. Correct Answer: B. Material availability (irrigation capacity)

- **Explanation:** The principal budget factor is the limiting factor that restricts the organisation's activity. In this scenario, while sales demand is 10,000 kg, the irrigation system can only support 7,000 kg, which is the true constraint on production. Therefore, **material availability** (specifically, the capacity of the irrigation system to support cultivation) is the limiting factor.

3. Correct Answer: C. £57,000

- **Explanation:** First, calculate the variable cost per litre from the original budget: £48,000 / 8,000 litres = **£6 per litre**. Then, calculate the flexed variable production costs for 9,500 litres: 9,500 litres * £6 per litre = **£57,000**. Fixed costs would remain unchanged, but the question specifically asks for variable production costs.

4. Correct Answer: A. Sales budget

- **Explanation:** The principal budget factor is the limiting factor that restricts the organisation's activity. If **sales are the limiting factor**, as described in this scenario where the ability to sell products is the main constraint, then the **sales budget** must be prepared first to determine the maximum achievable activity level.

5. Correct Answer: B. £166,000

- **Explanation:** Cash receipts in March consist of two parts: cash sales made in March and credit sales collected from February. Cash sales in March are 70% of £160,000 = **£112,000**. Credit sales from February collected in March are 30% of £180,000 = **£54,000**. Total cash receipts in March = £112,000 + £54,000 = **£166,000**.

6. Correct Answer: B. A lowering of morale and dysfunctional behaviour

- **Explanation:** Responsibility accounting dictates that managers should only be held accountable for figures they can control. If costs are not controllable, managers may be incorrectly penalised or rewarded, which can lead to a **lowering of morale and dysfunctional behaviour**, as they feel unfairly treated.

7. Correct Answer: C. It is prepared for a single level of activity and remains unchanged regardless of actual volume.

- **Explanation:** A fixed budget is prepared for a **single level of activity and remains unchanged** regardless of the actual volume. This makes it unsuitable for control and performance evaluation when the actual activity level differs from the budgeted level, as it does not provide a relevant comparison.

8. Correct Answer: B. Responding to divergences

- **Explanation:** The budgetary process cycle involves monitoring actual outcomes and then **responding to divergences**. Understanding the reasons for the shortfall and deciding on corrective actions is part of responding to divergences to bring performance back in line with objectives or adjust plans.

9. Correct Answer: C. The fixed budget does not account for changes in activity volume, making comparisons irrelevant.

- **Explanation:** A fixed budget is prepared for a single level of activity and remains unchanged regardless of the actual volume. When the actual activity level differs from the budgeted level, it is **not useful for control** because it does not provide a relevant basis for comparison of costs.

10. Correct Answer: C. £189,000

- **Explanation:** Cash receipts for October are calculated as:

- From October sales: 60% of £200,000 = £120,000
- From September sales: 30% of £180,000 = £54,000
- From August sales: 10% of £150,000 = £15,000
  Total cash receipts for October = £120,000 + £54,000 + £15,000 = **£189,000**.

Cost Classification

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

A company, **Alpha Manufacturing Ltd**, observes the following total costs and activity levels for its maintenance department over two months:

Month	Machine Hours	Total Maintenance Cost (£)
January	8,000	£28,000
March	12,000	£36,000

Using the high-low method, what is the estimated total fixed maintenance cost per month?

- **A.** £16,000
- **B.** £12,000
- **C.** £8,000
- **D.** £20,000

Question 2

CleanSweep Services provides office cleaning. The total cost of cleaning services for two different months was:

Month	Hours Worked	Total Cost (£)
April	1,500	£7,500
June	2,200	£9,600

If CleanSweep Services expects to work 1,800 hours in July, what is the estimated total cost for July, using the high-low method? Round to the nearest whole number.

- **A.** £8,700
- **B.** £9,000
- **C.** £8,400
- **D.** £8,100

Question 3

BrightBake Ltd manufactures artisanal bread. During the last quarter, the company incurred costs for flour, bakers' wages, factory rent, delivery van fuel, and salaries for administrative staff. At the end of the quarter, some finished bread remained unsold.

Which of the following costs would be included in the *inventory valuation* of the unsold bread?

- **A.** Flour, bakers' wages, factory rent, and delivery van fuel.
- **B.** Flour, bakers' wages, and factory rent.
- **C.** Flour, bakers' wages, and delivery van fuel.
- **D.** Flour, bakers' wages, factory rent, and administrative staff salaries.

Question 4

SecureGuard Services provides security personnel. The company employs security guards in teams of five, and each team requires a dedicated supervisor. A supervisor's salary is £3,000 per month. If the company needs to deploy more than five guards, a second supervisor is required, and so on. Currently, SecureGuard employs 12 guards.

What is the total monthly supervisor cost if SecureGuard Services decides to expand its operations to employ 18 guards?

- **A.** £9,000
- **B.** £12,000
- **C.** £3,000
- **D.** £6,000

Question 5

Continuing from the previous scenario for 'MetalWorks Ltd.', using the High-Low method and the calculated variable maintenance cost per machine hour of £2.00, what is the total fixed maintenance cost per month?

- **A.** £2,200
- **B.** £2,600
- **C.** £2,400
- **D.** £2,000

Question 6

TechGadget Co. manufactures a single product. A cost card for this product shows the following details:

- Direct materials: £15 per unit

- Direct labour: £10 per unit
- Direct expenses: £3 per unit
- Variable production overheads: £5 per unit
- Fixed production overheads: £8 per unit
- Non-production overheads (fixed): £4 per unit

What is the *Prime Cost* and the *Total Production Cost* per unit for TechGadget Co.?

- **A.** Prime Cost: £33; Total Production Cost: £45
- **B.** Prime Cost: £28; Total Production Cost: £41
- **C.** Prime Cost: £28; Total Production Cost: £45
- **D.** Prime Cost: £33; Total Production Cost: £41

Question 7

Global Gadgets Inc. manufactures electronic devices. The company incurs costs for the raw materials, factory utilities, salaries of the production line workers, advertising campaigns for new products, and interest payments on its bank loan.

Which of these costs would be classified as *non-production costs*?

- **A.** Salaries of production line workers and advertising campaigns.
- **B.** Raw materials and interest payments on its bank loan.
- **C.** Advertising campaigns and interest payments on its bank loan.
- **D.** Raw materials and factory utilities.

Question 8

PrintFast Ltd operates a printing press. The annual depreciation on the printing press equipment is £50,000. In the last year, PrintFast produced 100,000 brochures. This year, due to increased demand, they expect to produce 200,000 brochures.

Assuming the depreciation remains £50,000, what will be the impact on the *total fixed cost* and the *fixed cost per unit* when production doubles?

- **A.** Total fixed cost will remain constant; fixed cost per unit will double.
- **B.** Total fixed cost will double; fixed cost per unit will halve.
- **C.** Total fixed cost will halve; fixed cost per unit will remain constant.
- **D.** Total fixed cost will remain constant; fixed cost per unit will halve.

Question 9

A manufacturing business, **MetalWorks Ltd.**, uses a machine that incurs maintenance costs. These costs have both a fixed element (a basic service contract) and a variable element (based on machine hours run). The following data has been collected:

Month	Machine Hours	Total Maintenance Cost (£)
January	800	£4,200
February	1,200	£5,000
March	950	£4,500
April	1,500	£5,600

Using the High-Low method, what is the variable maintenance cost per machine hour?

- **A.** £3.50
- **B.** £2.50
- **C.** £3.00
- **D.** £2.00

Question 10

MediCare Supplies Ltd. manufactures medical equipment in its UK factory. The company's management accountant is preparing the financial statements and needs to correctly value inventory. The costs incurred include raw materials for production, wages for assembly line workers, depreciation of factory machinery, salaries for administrative staff, and distribution costs for delivering finished products to hospitals.

Which of the following costs would be included in the valuation of inventory for MediCare Supplies Ltd.?

- **A.** Salaries for administrative staff
- **B.** Distribution costs for finished products
- **C.** Finance costs
- **D.** Depreciation of factory machinery

Answer Key and Explanations

1. Correct Answer: B. £12,000

- **Explanation:** The variable cost per machine hour is calculated as the change in total cost divided by the change in activity level: (£36,000 - £28,000) / (12,000 - 8,000) machine hours = £8,000 / 4,000 machine hours = **£2 per machine hour**. To find the fixed cost, subtract the total variable cost from the

total cost at either the high or low activity level. Using the high activity level: £36,000 - (£2/hour x 12,000 hours) = £36,000 - £24,000 = **£12,000**.

2. Correct Answer: C. £8,400

- **Explanation:** First, calculate the variable cost per hour: (Change in Total Cost) / (Change in Hours Worked) = (£9,600 - £7,500) / (2,200 - 1,500) = £2,100 / 700 hours = **£3 per hour**. Next, calculate the fixed cost using either the high or low point. Using April's data: Fixed Cost = Total Cost - (Variable Cost per Hour x Hours Worked) = £7,500 - (£3 x 1,500) = £7,500 - £4,500 = **£3,000**. Finally, estimate the total cost for July at 1,800 hours: Total Cost = Fixed Cost + (Variable Cost per Hour x Hours Worked) = £3,000 + (£3 x 1,800) = £3,000 + £5,400 = **£8,400**.

3. Correct Answer: B. Flour, bakers' wages, and factory rent.

- **Explanation:** Inventory valuation includes production costs (also known as product costs), which are costs relating to manufacturing or providing a service. Flour (direct material), bakers' wages (direct labour), and factory rent (production overhead) are all production costs. Delivery van fuel is a distribution cost, and administrative staff salaries are administrative costs; both are non-production costs (period costs) and are expensed in the period incurred, not included in inventory valuation.

4. Correct Answer: B. £12,000

- **Explanation:** This scenario describes a stepped fixed cost. For every five guards, one supervisor is needed. For 18 guards, the company will need 18 / 5 = 3.6 supervisors. Since a fractional supervisor is not possible, 4 supervisors will be required to cover 18 guards (1-5 guards = 1 supervisor, 6-10 guards = 2 supervisors, 11-15 guards = 3 supervisors, 16-20 guards = 4 supervisors). Therefore, the total monthly supervisor cost will be 4 supervisors x £3,000/supervisor = **£12,000**.

5. Correct Answer: B. £2,600

- **Explanation:** Using the formula: Total costs = Total fixed costs + (Variable cost per unit × Activity level).
  Using the highest activity point (April): £5,600 = Fixed costs + (£2.00 × 1,500 hours)
  £5,600 = Fixed costs + £3,000
  Fixed costs = **£2,600**.

6. Correct Answer: B. Prime Cost: £28; Total Production Cost: £41

- **Explanation:** Prime Cost is the sum of direct materials, direct labour, and direct expenses. So, Prime Cost = £15 + £10 + £3 = **£28**. Total Production Cost (or Product Cost) includes Prime Cost plus all production overheads (both variable and fixed). So, Total Production Cost = £28 (Prime Cost) + £5 (Variable production overheads) + £8 (Fixed production overheads) = **£41**. Non-production overheads are period costs and are not included in the production cost per unit.

7. Correct Answer: C. Advertising campaigns and interest payments on its bank loan.

- **Explanation:** Non-production costs (also known as period costs) are not directly associated with manufacturing or providing a service; they are charged as expenses to the statement of profit or loss in the period incurred. Advertising campaigns are selling costs, and interest payments are finance costs, both of which are categories of non-production costs. Raw materials, factory utilities, and salaries of production line workers are all production costs.

8. Correct Answer: D. Total fixed cost will remain constant; fixed cost per unit will halve.

- **Explanation:** Fixed costs remain constant in total over a given level of activity. Therefore, the total depreciation of £50,000 will not change even if production doubles. However, the fixed cost per unit falls as the level of activity increases. If production doubles from 100,000 to 200,000 units, the fixed cost per unit will halve (from £50,000/100,000 = £0.50 to £50,000/200,000 = £0.25).

9. Correct Answer: D. £2.00

- **Explanation:** The High-Low method uses the highest and lowest activity levels.
  Highest activity: April (1,500 hours, £5,600)
  Lowest activity: January (800 hours, £4,200)
  Change in cost = £5,600 - £4,200 = £1,400
  Change in activity = 1,500 - 800 = 700 hours
  Variable cost per unit = Change in cost / Change in activity = £1,400 / 700 hours = **£2.00** per machine hour.

10. Correct Answer: D. Depreciation of factory machinery

- **Explanation:** Production Costs (Product Costs) are costs relating to manufacturing or providing a service and are included in inventory valuation. **Depreciation of factory machinery** is a production overhead. Administrative, distribution, and finance costs are non-production (period) costs and are not included in inventory valuation; they are expensed in the period incurred.

Investment Appraisal

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Lambda Ltd is considering a project with an initial investment of £120,926. The project is expected to generate annual net cash inflows of £45,000 for the next four years. The company's *cost of capital* is 8%.

Year	Discount Factor (8%)
1	0.926
2	0.857
3	0.794
4	0.735

Calculate the *Discounted Payback Period* for this project, rounded to two decimal places. Which of the following is correct?

- **A.** 3.15 years
- **B.** 3.00 years
- **C.** 2.67 years
- **D.** 3.33 years

Question 2

Xi Industries is considering a project with an initial investment in fixed assets of £197,730. Additionally, the project requires an initial investment in *working capital* of £30,000, which will be fully recovered at the end of Year 3. The project generates annual net cash inflows (before considering working capital changes) of £90,000 for three years. The *cost of capital* is 10%.

Year	Discount Factor (10%)
1	0.909
2	0.826
3	0.751

Calculate the *Net Present Value (NPV)* of the project, rounded to the nearest whole number. Which of the following is correct?

- **A.** £48,540

- **B.** £18,540
- **C.** £22,050
- **D.** £(11,460)

Question 3

Kappa Co. is considering launching a new product line. The initial investment for equipment is £150,000. The new product is expected to generate additional sales revenue of £80,000 per year. However, it is estimated that sales of an existing product line will decrease by £20,000 per year due to the new product (*cannibalisation*). Variable costs for the new product are 40% of its sales revenue, and variable costs for the lost sales of the existing product were 60% of its sales revenue. Fixed costs will increase by £5,000 per year.

What is the *incremental annual net cash inflow* for the first year, rounded to the nearest whole number?

- **A.** £60,000
- **B.** £53,000
- **C.** £47,000
- **D.** £35,000

Question 4

Epsilon Enterprises is considering a project with an initial investment of £100,000. The project is expected to generate the following annual cash inflows:

Year	Cash Inflow (£)
1	30,000
2	40,000
3	35,000
4	25,000

Calculate the *Payback Period* for this project. Which of the following is correct?

- **A.** 3 years and 2 months
- **B.** 2 years and 6 months
- **C.** 3 years
- **D.** 2 years and 10 months

Question 5

Iota Industries is evaluating a project that has an *Internal Rate of Return (IRR)* of 14%. The company's *cost of capital* is 16%. The project also has a positive *Net Present Value (NPV)* when discounted at the cost of capital.

Given this conflict, which investment appraisal method's decision rule should take precedence, and why?

- **A.** IRR, because it considers the whole project life and time value of money.
- **B.** IRR, because it is easily understood by non-financial managers.
- **C.** NPV, because it is a measure of absolute profitability and maximises shareholder wealth.
- **D.** NPV, because it is typically an estimate derived by interpolation.

Question 6

A company, **Alpha Ltd**, is considering investing in a new machine. The machine's purchase price is £250,000. Installation costs are estimated at £20,000. Training for staff to operate the new machine will cost £10,000. The existing machine, which the new one will replace, could be sold for £30,000. Additionally, the project will require an initial increase in inventory of £15,000.

What is the *relevant initial cash outflow* for this investment appraisal, rounded to the nearest whole number?

- **A.** £280,000
- **B.** £250,000
- **C.** £265,000
- **D.** £295,000

Question 7

Mu Corporation is evaluating two mutually exclusive projects, Project A and Project B, both requiring the same initial investment. The company's *cost of capital* is 12%.

Project	Net Present Value (NPV)	Internal Rate of Return (IRR)
A	£50,000	18%
B	£70,000	15%

Which project should **Mu Corporation** choose, and why?

- **A.** Project B, because it has a higher NPV.
- **B.** Project A, because its IRR is further above the cost of capital.
- **C.** Project B, because its IRR is closer to the cost of capital.
- **D.** Project A, because it has a higher IRR.

Question 8

Beta Manufacturing is evaluating a project with an initial investment of £171,240. The project is expected to generate annual net cash inflows of £60,000 for the next four years. The company's *cost of capital* is 10%.

Year	Discount Factor (10%)
1	0.909
2	0.826
3	0.751
4	0.683

Calculate the *Net Present Value (NPV)* of the project, rounded to the nearest whole number. Which of the following is correct?

- **A.** £24,000
- **B.** £18,900
- **C.** £(18,900)
- **D.** £198,900

Question 9

Delta Co. is considering investing in a new production line. If the new line is implemented, it is expected to generate additional annual revenue of £200,000. However, the existing production line, which would be replaced, currently generates £50,000 in annual revenue.

What is the incremental annual revenue that should be considered for the investment appraisal of the new production line?

- **A.** £200,000
- **B.** £150,000
- **C.** £50,000
- **D.** £250,000

Question 10

Gamma Innovations is appraising a new product development project. At a *discount rate* of 12%, the project yields a positive *Net Present Value (NPV)* of £5,000. However, when a discount rate of 18% is used, the NPV becomes negative at £2,000.

Based on this information, what can be concluded about the project's *Internal Rate of Return (IRR)*?

- **A.** The IRR is exactly 15%.

- **B.** The IRR is greater than 18%.
- **C.** The IRR is less than 12%.
- **D.** The IRR is between 12% and 18%.

Answer Key and Explanations

1. Correct Answer: A. 3.15 years

- **Explanation:** The discounted payback period is calculated by finding the present value of each cash inflow and then determining the point at which the cumulative present value of inflows equals the initial investment.
    - Year 1 PV: £45,000 x 0.926 = £41,670. Cumulative PV: £41,670. Remaining: £120,926 - £41,670 = £79,256.
    - Year 2 PV: £45,000 x 0.857 = £38,565. Cumulative PV: £41,670 + £38,565 = £80,235. Remaining: £79,256 - £38,565 = £40,691.
    - Year 3 PV: £45,000 x 0.794 = £35,730. Cumulative PV: £80,235 + £35,730 = £115,965. Remaining: £40,691 - £35,730 = £4,961.
      The remaining amount of £4,961 needs to be recovered in Year 4. The discounted cash flow for Year 4 is £45,000 x 0.735 = £33,075.
      Fraction of Year 4 = £4,961 / £33,075 = 0.15 years.
      Therefore, the discounted payback period is 3 years + 0.15 years = **3.15 years**.

2. Correct Answer: B. £18,540

- **Explanation:** The Net Present Value calculation includes all relevant cash flows.
  Initial outflow = £197,730 (fixed assets) + £30,000 (working capital) = **£227,730**.
  Present value of annual inflows = (£90,000 x 0.909) + (£90,000 x 0.826) + (£90,000 x 0.751) = £81,810 + £74,340 + £67,590 = **£223,740**.
  Present value of working capital recovery in Year 3 = £30,000 x 0.751 = **£22,530**.
  Total present value of inflows = £223,740 + £22,530 = **£246,270**.
  NPV = Total PV of inflows - Initial outflow = £246,270 - £227,730 = **£18,540**.

3. Correct Answer: D. £35,000

- **Explanation:** The incremental annual net cash inflow is calculated by considering all additional revenues and costs, and any revenues lost or costs saved due to the project.
  New product revenue: +£80,000
  New product variable cost (40%): -£32,000
  Lost existing revenue: -£20,000
  Variable cost saved from lost sales (60% of lost revenue): +£12,000
  Incremental fixed costs: -£5,000
  Total = £80,000 - £32,000 - £20,000 + £12,000 - £5,000 = **£35,000**.

4. Correct Answer: D. 2 years and 10 months

- **Explanation:** The payback period is the time it takes for a project's cash inflows to recover the initial investment. After Year 2, £70,000 (£30,000 + £40,000) has been recovered, leaving **£30,000** (£100,000 - £70,000) to be recovered. In Year 3, £35,000 is generated. To recover the remaining £30,000, it will take (30,000 / 35,000) of Year 3, which is approximately 0.857 years or **10.28 months**. Therefore, the payback period is **2 years and approximately 10 months**.

5. Correct Answer: C. NPV, because it is a measure of absolute profitability and maximises shareholder wealth.

- **Explanation:** When there is a conflict between the Net Present Value (NPV) and Internal Rate of Return (IRR) decision rules, **NPV takes precedence**. This is because NPV measures absolute profitability and directly aligns with the objective of maximising shareholder wealth, whereas IRR is not a measure of absolute profitability and can sometimes lead to incorrect decisions, especially with non-conventional cash flows or mutually exclusive projects.

6. Correct Answer: C. £265,000

- **Explanation:** The relevant initial cash outflow includes the purchase price, installation costs, and training costs, as these are future, cash, and incremental. The scrap value of the old machine is an opportunity cost, representing a cash inflow foregone, so it **reduces** the net outflow. The initial increase in inventory is also an incremental cash outflow. Therefore, £250,000 + £20,000 + £10,000 - £30,000 + £15,000 = **£265,000**.

7. Correct Answer: A. Project B, because it has a higher NPV.

- **Explanation:** When evaluating mutually exclusive projects, if there is a conflict between the Net Present Value (NPV) and Internal Rate of Return (IRR) decision rules, **NPV takes precedence**. NPV directly measures the absolute increase in shareholder wealth. Project B has a higher NPV (£70,000) compared to Project A (£50,000), indicating it will add more value to the company, even though Project A has a higher IRR.

8. Correct Answer: B. £18,900

- **Explanation:** The Net Present Value is calculated by discounting all future cash inflows back to their present value using the cost of capital and then subtracting the initial investment. The sum of the present values of the annual inflows is £60,000 x (0.909 + 0.826 + 0.751 + 0.683) = £60,000 x 3.169 = **£190,140**. Subtracting the initial investment of £171,240 gives an NPV of £190,140 - £171,240 = **£18,900**.

9. Correct Answer: B. £150,000

- **Explanation:** Relevant cash flows must be **incremental**, meaning they are the extra cost or revenue created specifically as a result of the investment decision. The incremental revenue is the additional revenue generated by the new line (£200,000) less the revenue lost from the existing line (£50,000) = **£150,000**.

10. Correct Answer: D. The IRR is between 12% and 18%.

- **Explanation:** The Internal Rate of Return (IRR) is the discount rate at which a project's Net Present Value (NPV) equals zero. Since the NPV is positive at 12% and negative at 18%, the rate at which the NPV would be zero must lie **somewhere between these two discount rates**.

Job, batch and process costing

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Textile Dyes Ltd processes 2,000 litres of input in Process X at a total cost of £10,000. Normal loss is 10% of input and has no scrap value. Actual output was 1,700 litres.

What is the value of the abnormal loss for Process X? (Round to 2 decimal places).

- **A.** £500.00
- **B.** £555.56
- **C.** £1,000.00
- **D.** £1,111.11

Question 2

WoodWorks Co. processes timber. From a single process, it produces high-quality lumber and wood chips. The lumber has a very high saleable value and is considered a primary output. The wood chips are produced incidentally, have a relatively low sales value, and are often sold for landscaping or fuel.

Based on their relative saleable values and production nature, how should lumber and wood chips be classified, respectively?

- **A.** Lumber as a Joint Product and wood chips as a Byproduct.
- **B.** Both as Joint Products.
- **C.** Lumber as a Byproduct and wood chips as a Joint Product.
- **D.** Both as Byproducts.

Question 3

Nu Plastics produces a single type of plastic sheet through a continuous manufacturing process. The input for the month was 10,000 kg of raw material. Normal loss is 5% of input. The actual output achieved was 9,600 kg.

Using the unit balance rule (Input units ± Abnormal gain/loss = Output units + Normal loss), what is the correct classification and quantity of the loss or gain?

- **A.** 200 kg Abnormal Gain
- **B.** 100 kg Abnormal Loss

- **C.** 200 kg Abnormal Loss
- **D.** 100 kg Abnormal Gain

Question 4

Dairy Delights processes milk into two joint products: Cream and Skimmed Milk. Joint costs incurred up to the split-off point are £50,000. Cream can be sold at the split-off point for £20,000 or processed further at a cost of £5,000 to sell for £30,000. Skimmed Milk can be sold at the split-off point for £15,000 or processed further at a cost of £2,000 to sell for £18,000.

Using the Net Realisable Value (NRV) method, how much of the joint costs should be apportioned to Cream? (Round to the nearest pound).

- **A.** £20,000
- **B.** £30,488
- **C.** £19,512
- **D.** £25,000

Question 5

Oil Refining Co processes crude oil, resulting in two joint products: Petrol and Paraffin. Joint costs incurred up to the split-off point were £100,000. At the split-off point, 60,000 litres of Petrol can be sold for £1.50 per litre and 40,000 litres of Paraffin can be sold for £1.00 per litre.

Using the sales value of production method, how much of the joint costs should be apportioned to Petrol? (Round to the nearest pound).

- **A.** £69,231
- **B.** £40,000
- **C.** £60,000
- **D.** £75,000

Question 6

Chemicals Inc. produces Product X, which can be sold at the split-off point for £10 per unit. Alternatively, Product X can be further processed into Product Y at an additional cost of £3 per unit. Product Y can then be sold for £14 per unit. Joint costs incurred before the split-off point are £5 per unit.

Should **Chemicals Inc.** process Product X further into Product Y?

- **A.** No, because the selling price of Product Y is not significantly higher than Product X.

- **B.** No, because the joint costs make it unprofitable.
- **C.** Yes, because the total revenue from Product Y is higher.
- **D.** Yes, because the incremental sales revenue exceeds the incremental costs.

Question 7

Beverage Blenders incurred total costs of £9,500 for Process C, which processed 1,000 litres of input. Normal loss is 5% of input. There was no abnormal loss or gain. The normal loss has a scrap value of £0.50 per litre.

What is the cost per good unit (litre) of output from Process C? (Round to 2 decimal places).

- **A.** £10.00
- **B.** £9.97
- **C.** £9.48
- **D.** £9.50

Question 8

In Process B, **AgriFoods** recorded an input of 5,000 kg of raw materials. Normal loss is 5% of input. During the period, there was an abnormal gain of 100 kg.

What was the actual output of good units from Process B in kg?

- **A.** 4,850 kg
- **B.** 4,750 kg
- **C.** 5,250 kg
- **D.** 5,100 kg

Question 9

Fluid Dynamics Ltd processes a liquid product through Process A. In a recent period, 10,000 litres of raw material were input into Process A. Normal loss is expected to be 10% of input. Actual output from Process A was 9,200 litres.

What is the abnormal loss or gain for Process A in litres?

- **A.** 800 litres abnormal loss
- **B.** 1,000 litres normal loss
- **C.** 200 litres abnormal loss
- **D.** 200 litres abnormal gain

Question 10

Lambda Textiles produces a base fabric. At the split-off point, this fabric can be sold for £10 per metre. Alternatively, it can be dyed and treated to become a premium fabric, which would sell for £18 per metre. The additional processing costs for dyeing and treating are £6 per metre.

Should Lambda Textiles process the base fabric further into premium fabric?

- **A.** No, because the incremental cost is too high.
- **B.** Yes, because the premium fabric has a higher selling price.
- **C.** No, because the joint costs are not covered.
- **D.** Yes, because the incremental revenue exceeds the incremental cost.

Answer Key and Explanations

1. Correct Answer: B. £555.56

- **Explanation:** Normal loss units = 2,000 litres x 10% = 200 litres. Expected output = Input - Normal loss = 2,000 - 200 = **1,800 litres**. Actual output = 1,700 litres. Abnormal loss units = Expected output - Actual output = 1,800 - 1,700 = **100 litres**. Since there is no scrap value for normal loss, the cost per unit for good output and abnormal loss is calculated as Total Cost / (Input - Normal Loss Units) = £10,000 / (2,000 - 200) = £10,000 / 1,800 = £5.5555... per litre. Value of abnormal loss = 100 units x £5.5555.../unit = **£555.56**.

2. Correct Answer: A. Lumber as a Joint Product and wood chips as a Byproduct.

- **Explanation:** Joint products are two or more products, both having a sufficiently high saleable value to be considered main products. Byproducts are products produced incidentally, having a relatively low sales value compared to main products. Given the description, lumber fits the definition of a **joint product** due to its high saleable value, and wood chips fit the definition of a **byproduct** due to their incidental production and low sales value.

3. Correct Answer: D. 100 kg Abnormal Gain

- **Explanation:** Normal loss = 10,000 kg * 5% = **500 kg**. Expected output = Input - Normal loss = 10,000 kg - 500 kg = **9,500 kg**. Actual output = 9,600 kg. Since actual output is greater than expected output, there is an abnormal gain. Abnormal gain = Actual output - Expected output = 9,600 kg - 9,500 kg = **100 kg**. The unit balance rule would be 10,000 (Input) + 100 (Abnormal Gain) = 9,600 (Output) + 500 (Normal Loss), which balances at 10,100.

4. Correct Answer: B. £30,488

- **Explanation:** First, calculate the NRV for each product. NRV for Cream = Further Sales Value - Further Processing Costs = £30,000 - £5,000 = **£25,000**. NRV for Skimmed Milk = Further Sales Value - Further Processing Costs = £18,000 - £2,000 = **£16,000**. Total NRV = £25,000 + £16,000 = **£41,000**. The

proportion for Cream is £25,000 / £41,000. Apportioned joint costs to Cream = (£25,000 / £41,000) x £50,000 = £30,487.80, which rounds to **£30,488**.

5. Correct Answer: A. £69,231

- **Explanation:** First, calculate the total sales value of production at the split-off point. Sales value of Petrol = 60,000 litres x £1.50/litre = **£90,000**. Sales value of Paraffin = 40,000 litres x £1.00/litre = **£40,000**. Total sales value = £90,000 + £40,000 = **£130,000**. The proportion for Petrol is £90,000 / £130,000. Apportioned joint costs to Petrol = (£90,000 / £130,000) x £100,000 = £69,230.77, which rounds to **£69,231**.

6. Correct Answer: D. Yes, because the incremental sales revenue exceeds the incremental costs.

- **Explanation:** The decision to process further should only occur if the incremental sales revenue generated by processing further exceeds the incremental costs of further processing. Joint costs are irrelevant as they are sunk costs. Incremental sales revenue = £14 (Product Y) - £10 (Product X) = **£4 per unit**. Incremental costs = **£3 per unit**. Since £4 > £3, further processing is financially beneficial.

7. Correct Answer: B. £9.97

- **Explanation:** Normal loss units = 1,000 litres x 5% = **50 litres**. Scrap value from normal loss = 50 litres x £0.50/litre = **£25**. Net process cost = Total costs - Scrap value of normal loss = £9,500 - £25 = **£9,475**. Good output units = Input units - Normal loss units = 1,000 - 50 = **950 litres**. Cost per good unit = Net process cost / Good output units = £9,475 / 950 = £9.9736..., which rounds to **£9.97**.

8. Correct Answer: A. 4,850 kg

- **Explanation:** First, calculate the normal loss: 5% of 5,000 kg = **250 kg**. The unit balance rule states: Input units ± Abnormal gain/loss = Output units + Normal loss. Plugging in the values: 5,000 kg (Input) + 100 kg (Abnormal Gain) = Output units + 250 kg (Normal Loss). This simplifies to 5,100 kg = Output units + 250 kg. Therefore, Output units = 5,100 kg - 250 kg = **4,850 kg**.

9. Correct Answer: D. 200 litres abnormal gain

- **Explanation:** Normal loss is 10% of the input, so 10,000 litres x 10% = **1,000 litres**. The expected output would be Input - Normal Loss = 10,000 - 1,000 = **9,000 litres**. Since the actual output was 9,200 litres, which is greater than the expected output, there is an abnormal gain. Abnormal gain = Actual output - Expected output = 9,200 - 9,000 = **200 litres**.

10. Correct Answer: D. Yes, because the incremental revenue exceeds the incremental cost.

- **Explanation:** The decision rule for further processing is that it should only occur if the incremental sales revenue generated by processing further exceeds the incremental costs of further processing. Incremental revenue = £18 - £10 = **£8 per metre**. Incremental cost = **£6 per metre**. Since £8 > £6, further processing is financially beneficial.

Job, batch and process costing

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Textile Dyes Ltd processes 2,000 litres of input in Process X at a total cost of £10,000. Normal loss is 10% of input and has no scrap value. Actual output was 1,700 litres.

What is the value of the abnormal loss for Process X? (Round to 2 decimal places).

- **A.** £500.00
- **B.** £555.56
- **C.** £1,000.00
- **D.** £1,111.11

Question 2

WoodWorks Co. processes timber. From a single process, it produces high-quality lumber and wood chips. The lumber has a very high saleable value and is considered a primary output. The wood chips are produced incidentally, have a relatively low sales value, and are often sold for landscaping or fuel.

Based on their relative saleable values and production nature, how should lumber and wood chips be classified, respectively?

- **A.** Lumber as a Joint Product and wood chips as a Byproduct.
- **B.** Both as Joint Products.
- **C.** Lumber as a Byproduct and wood chips as a Joint Product.
- **D.** Both as Byproducts.

Question 3

Nu Plastics produces a single type of plastic sheet through a continuous manufacturing process. The input for the month was 10,000 kg of raw material. Normal loss is 5% of input. The actual output achieved was 9,600 kg.

Using the unit balance rule (Input units ± Abnormal gain/loss = Output units + Normal loss), what is the correct classification and quantity of the loss or gain?

- **A.** 200 kg Abnormal Gain
- **B.** 100 kg Abnormal Loss

- **C.** 200 kg Abnormal Loss
- **D.** 100 kg Abnormal Gain

Question 4

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- **Explanation:** Normal loss is 10% of the input, so 10,000 litres x 10% = **1,000 litres**. The expected output would be Input - Normal Loss = 10,000 - 1,000 = **9,000 litres**. Since the actual output was 9,200 litres, which is greater than the expected output, there is an abnormal gain. Abnormal gain = Actual output - Expected output = 9,200 - 9,000 = **200 litres**.

10. Correct Answer: D. Yes, because the incremental revenue exceeds the incremental cost.

- **Explanation:** The decision rule for further processing is that it should only occur if the incremental sales revenue generated by processing further exceeds the incremental costs of further processing. Incremental revenue = £18 - £10 = **£8 per metre**. Incremental cost = **£6 per metre**. Since £8 > £6, further processing is financially beneficial.

Performance measurement

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Division B has a controllable profit of £750,000 and controllable capital of £3,000,000. The company's notional cost of capital is 15%. The division is evaluating a new project that requires an additional £500,000 capital and is expected to generate an additional controllable profit of £90,000.

Calculate the *Residual Income (RI)* for **Division B** if it undertakes the new project, and determine if it promotes *goal congruence*. Which of the following is correct?

- **A.** £300,000; No, because the project's ROI is below the current divisional ROI.
- **B.** £450,000; No, because the overall cost of capital increases.
- **C.** £15,000; Yes, because the project's profit exceeds its capital cost.
- **D.** £315,000; Yes, because the project generates a positive residual income.

Question 2

Division A has a current *Return on Investment (ROI)* of 20%. It is considering a new project requiring £1,000,000 capital, expected to generate £180,000 controllable profit. The division's current controllable capital is £5,000,000 and controllable profit is £1,000,000. The company's notional cost of capital is 12%.

If the division manager's performance is solely measured by ROI, what is the most likely decision regarding the new project, and why?

- **A.** Accept the project, as it generates a positive residual income.
- **B.** Accept the project, as its individual ROI of 18% is above the cost of capital.
- **C.** Reject the project, as its profit margin is too low.
- **D.** Reject the project, as it would reduce the division's average ROI.

Question 3

A fast-food chain, **Burger Bliss**, aims to be the market leader in customer satisfaction. To achieve this, it identifies several areas that need to be performed exceptionally well.

Which of the following would be considered a *Critical Success Factor (CSF)* for **Burger Bliss**?

- **A.** Reducing operating costs by 10%.
- **B.** Achieving 95% customer satisfaction ratings.

- **C.** Maintaining high food quality and speed of service.
- **D.** Increasing market share by 5% annually.

Question 4

A division manager is considering a project that would reduce the division's overall *Return on Investment (ROI)* from 18% to 17% but would increase the company's overall profit and *Residual Income (RI)*. The company's notional cost of capital is 10%.

If the manager is evaluated solely on divisional ROI, what is the most likely outcome, and what concept does this illustrate?

- **A.** The manager will reject the project, illustrating dysfunctional decision making.
- **B.** The manager will reject the project, illustrating effective liquidity management.
- **C.** The manager will accept the project, illustrating short-termism.
- **D.** The manager will accept the project, illustrating goal congruence.

Question 5

The board of **Global Solutions Inc.** is concerned that its managers are making decisions that boost annual profits at the expense of long-term sustainability, such as cutting employee training budgets.

Which type of performance indicator would be most effective in countering this risk of *short-termism*?

- **A.** Non-Financial Performance Indicators (NFPIs)
- **B.** Return on Sales (ROS)
- **C.** Financial Performance Measures
- **D.** Return on Investment (ROI)

Question 6

A factory is designed to operate for 2,500 hours per month at full capacity. In a particular month, it actually operated for 2,100 hours. The standard hours of production for the actual output achieved were 2,000 hours.

Calculate the *Capacity Ratio* for the factory for that month, rounded to one decimal place. Which of the following is correct?

- **A.** 95.2%
- **B.** 80.0%
- **C.** 105.0%

- **D.** 84.0%

Question 7

TechInnovate Ltd. is implementing a *Balanced Scorecard*. The management team is debating which perspective best captures the metric 'average time to market for new products'.

Under which perspective of the *Balanced Scorecard* would 'average time to market for new products' most appropriately be classified?

- **A.** Financial perspective
- **B.** Customer perspective
- **C.** Internal Business Process perspective
- **D.** Innovation and Learning perspective

Question 8

Precision Engineering has adopted a philosophy that requires every individual within the organisation, from top management to suppliers, to be actively involved in ensuring that customer requirements are consistently met.

This philosophy, focused on achieving quality through involvement across the entire value chain, is known as *Total Quality Management (TQM)*. Which statement best describes its core principle?

- **A.** Quality is ensured by rigorous final product inspection.
- **B.** Quality is achieved by meeting customer requirements through involvement of everyone in the value chain.
- **C.** Quality is solely about minimizing production costs.
- **D.** Quality is primarily the responsibility of the quality control department.

Question 9

The 'Western Division' of a manufacturing organisation, **Industrial Innovations Ltd**, is an investment centre whose performance is evaluated using Return on Investment (ROI). The division currently has an average ROI of 18%. The divisional management is considering a new project that is expected to generate a return of 16%, which is still above the company's cost of capital of 12%. However, the divisional manager is hesitant to accept this project.

Which disadvantage of ROI is most likely influencing the Western Division manager's decision?

- **A.** It is difficult to calculate controllable profit.
- **B.** It does not consider the cost of capital.

- **C.** It promotes short-termism.
- **D.** It may lead to dysfunctional decision making.

Question 10

The founders of **GreenEnergy Corp.** are drafting a statement that encapsulates their ultimate purpose and long-term aspiration for the company.

This statement, defining the overall goal of the organisation, is known as its *Mission Statement*. Which of the following best describes its primary focus?

- **A.** To detail the company's operational procedures.
- **B.** To define the overall goal of the organisation, such as maximising shareholder wealth.
- **C.** To list the key performance indicators for all departments.
- **D.** To outline specific annual financial targets.

Answer Key and Explanations

1. Correct Answer: D. £315,000; Yes, because the project generates a positive residual income.

- **Explanation:** First, calculate the RI of the new project: Controllable Profit (£90,000) - (Controllable Capital (£500,000) x Notional Cost of Capital (15%)) = £90,000 - £75,000 = **£15,000**. Since this project generates a positive RI, it is beneficial for the company. The current RI for Division B is £750,000 - (£3,000,000 x 15%) = £750,000 - £450,000 = **£300,000**. If the project is undertaken, the total RI for Division B will be £300,000 + £15,000 = **£315,000**. The advantage of RI is that it promotes goal congruence, encouraging managers to accept any project that generates an RI greater than zero, as this adds value to the company.

2. Correct Answer: D. Reject the project, as it would reduce the division's average ROI.

- **Explanation:** The new project has an ROI of (£180,000 / £1,000,000) = **18%**. The division's current ROI is **20%**. If the project is accepted, the new combined ROI would be (£1,000,000 + £180,000) / (£5,000,000 + £1,000,000) = £1,180,000 / £6,000,000 = **19.67%**. Since 19.67% is less than the current 20%, a manager focused solely on ROI would **reject** the project to avoid lowering their division's average performance metric, even though the project itself is profitable and generates a positive residual income (£180,000 - £1,000,000x0.12 = £60,000).

3. Correct Answer: C. Maintaining high food quality and speed of service.

- **Explanation:** Critical Success Factors are the essential areas that must be performed well to achieve the mission or objectives. **Maintaining high food quality and speed of service** are fundamental operational aspects that directly contribute to customer satisfaction, which is Burger Bliss's overall goal. The other options are either objectives (increasing market share, reducing costs) or Key

Performance Indicators (95% customer satisfaction ratings) used to monitor CSFs, rather than the CSFs themselves.

4. Correct Answer: A. The manager will reject the project, illustrating dysfunctional decision making.

- **Explanation:** The disadvantage of ROI as a performance measure is that it may lead to **dysfunctional decision making**. Managers might reject profitable projects if accepting them would reduce the division's average ROI, even if the project would increase the overall company's profit and residual income (meaning it generates returns above the cost of capital). This scenario perfectly illustrates such a situation, where a manager would likely reject a value-adding project to protect their divisional ROI.

5. Correct Answer: A. Non-Financial Performance Indicators (NFPIs)

- **Explanation:** Relying solely on financial indicators can lead to short-termism, where managers sacrifice long-term health (e.g., cutting training) to boost annual profit. **Non-Financial Performance Indicators (NFPIs)** are particularly important because they provide a broader view of performance, including aspects like employee training, customer satisfaction, and innovation, which are crucial for long-term sustainability and directly counter the risks associated with short-term financial focus.

6. Correct Answer: D. 84.0%

- **Explanation:** The Capacity Ratio measures the extent to which available capacity is utilized. It is calculated as (Actual Hours Worked / Budgeted Hours or Maximum Possible Hours).
  Capacity Ratio = (2,100 hours / 2,500 hours) x 100% = 0.84 x 100% = **84.0%**.
  The standard hours of production for actual output (2,000 hours) would be used for the Efficiency Ratio, not the Capacity Ratio.

7. Correct Answer: C. Internal Business Process perspective

- **Explanation:** The 'average time to market for new products' is a measure of efficiency and speed within the company's operations, specifically related to product development and delivery. This directly aligns with the **Internal Business Process perspective** of the Balanced Scorecard, which focuses on measures like efficiency, quality, and operational excellence.

8. Correct Answer: B. Quality is achieved by meeting customer requirements through involvement of everyone in the value chain.

- **Explanation:** Total Quality Management (TQM) is a philosophy requiring everyone in the value chain (including employees and suppliers) to be involved in achieving quality by meeting customer requirements. It emphasizes a holistic approach to quality, rather than isolating it to a single department or focusing only on inspection or cost reduction.

9. Correct Answer: D. It may lead to dysfunctional decision making.

- **Explanation:** A disadvantage of ROI is that it may lead to **dysfunctional decision making**, where managers reject profitable projects if accepting them would reduce the division's average ROI, even if the project's return is above the cost of capital. The manager is hesitant to accept a profitable project (16% return > 12% cost of capital) because it would lower the division's average ROI from 18% to 17%.

10. Correct Answer: B. To define the overall goal of the organisation, such as maximising shareholder wealth.

- **Explanation:** A Mission Statement is the overall goal of the organisation. It **defines the ultimate purpose and long-term aspiration**, often including objectives like maximising shareholder wealth or providing a specific value to customers or society. It is a broad statement of intent, not a detailed plan of action or a list of specific metrics.

Presenting information

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

A new project manager, Mr. Davies, has requested a detailed report on the operational efficiency of the production line. He is new to the company and unfamiliar with its internal metrics. The finance team needs to prepare this report.

According to the **four-stage approach** to writing reports, what is the *first* crucial step the management accountant should undertake in the 'Prepare' stage for this request?

- **A.** Reread the completed report to check for completeness and clarity.
- **B.** Select relevant data on production line efficiency and arrange it logically.
- **C.** Determine the required document type, establish Mr. Davies as the user, and identify the report's purpose.
- **D.** Draft the report using a formal writing style, ensuring all calculations are accurate.

Question 2

A management accountant has prepared a comprehensive report on a proposed capital investment project. The report's 'Analysis' section discusses the project's viability and key financial metrics. However, the detailed discounted cash flow calculations and sensitivity analysis tables are extensive and would disrupt the flow of the main report if included directly.

According to good report structure, where should the detailed discounted cash flow calculations and sensitivity analysis tables be placed?

- **A.** Directly within the 'Analysis' section, integrated with the discussion.
- **B.** In Appendices, referenced in the main report.
- **C.** Within the 'Introduction' section to provide context.
- **D.** In the 'Conclusion' section, as supporting evidence for recommendations.

Question 3

Ms. Chen, a management accountant, has just finished drafting a report on the company's Q3 performance. In the 'Conclusion' section, she has summarised the key findings and provided recommendations for cost reduction. However, she then decided to add a newly discovered variance analysis for a specific product line, which was not discussed in the 'Analysis' section, to strengthen her recommendations.

Which principle of good report structure has Ms. Chen violated by adding the new variance analysis to the 'Conclusion' section?

- **A.** Detailed calculations should always be placed in the main report.
- **B.** The conclusion should not include recommendations.
- **C.** The conclusion should never introduce new material.
- **D.** The introduction should explain the work done, not the conclusion.

Question 4

Alpha Manufacturing produces three main product lines: A, B, and C. The management wants to see the total sales for each of its four regional offices (North, South, East, West) and also understand the *contribution of each product line to that total sales figure* within each region.

Which type of bar chart would be most effective for **Alpha Manufacturing** to display the total sales for each regional office, while simultaneously showing the sales breakdown by product line within each region?

- **A.** Percentage Component Bar Chart
- **B.** Simple Bar Chart
- **C.** Compound (Multiple) Bar Chart
- **D.** Component Bar Chart

Question 5

A management accountant has prepared a series of tables and graphs detailing the company's recent production costs, including variances. She presents these visuals to the production manager. The production manager understands the numbers but is unsure what actions to take based on the information.

Beyond just presenting the data, what is the management accountant's crucial role in this scenario?

- **A.** To gather more data to confirm the variances before any action is considered.
- **B.** To simply ensure the data is accurate and visually appealing.
- **C.** To delegate the interpretation task to the production manager.
- **D.** To interpret the information to help management reach conclusions and potentially make suitable recommendations.

Question 6

After completing the 'Write' stage of a critical management report, Sarah, a management accountant, is preparing to submit it to the senior management team. She has already checked for spelling and arithmetic errors during the writing phase.

According to the **four-stage approach**, what is the primary action Sarah should take during the 'Review' stage before submitting the report?

- **A.** Introduce new recommendations based on recent market data.
- **B.** Determine the required document type and establish the user's assumed knowledge.
- **C.** Reread the report, check it meets the document requirements, and ensure it is complete and clear.
- **D.** Begin planning the next report by selecting relevant data.

Question 7

A sales manager wants to compare the sales performance of two different product lines (Product X and Product Y) across four different sales regions (North, South, East, West) for the last quarter. He wants to see the sales for Product X and Product Y side-by-side for each region.

Which type of bar chart would be most suitable for the sales manager to compare the sales of Product X and Product Y for each region separately?

- **A.** Component Bar Chart
- **B.** Compound (Multiple) Bar Chart
- **C.** Simple Bar Chart
- **D.** Percentage Component Bar Chart

Question 8

Zenith Retail wants to illustrate the breakdown of its total annual sales revenue (£500,000) across its five main product categories: Electronics (£150,000), Clothing (£125,000), Home Goods (£100,000), Food (£75,000), and Books (£50,000). They need a visual representation that clearly shows the *relative contribution* of each category to the overall sales.

Which type of chart would be most appropriate for **Zenith Retail** to display the *relative contribution* of each product category to its total annual sales?

- **A.** Scatter Diagram
- **B.** Pie Chart
- **C.** Line Graph
- **D.** Simple Bar Chart

Question 9

Tech Solutions Ltd is investigating whether there is a *relationship (correlation)* between the amount spent on research and development (R&D) and the number of new patents filed each year. They have collected data for both variables over the past ten years and want to visually assess if a correlation exists.

Which type of visual representation would be most suitable for **Tech Solutions Ltd** to show the *relationship (correlation)* between R&D expenditure and the number of new patents filed?

- **A.** Scatter Diagram
- **B.** Percentage Component Bar Chart
- **C.** Line Graph
- **D.** Component Bar Chart

Question 10

A junior accountant, Alex, has prepared a table showing the monthly sales figures for the past year. The table has a clear title and column headings, but the sales figures are presented as raw numbers (e.g., 125,000, 150,000) without any indication of scale. The company typically reports figures in thousands of pounds.

Which key rule of **tabulation** has Alex most likely overlooked in his report?

- **A.** The table must cite the source of the material.
- **B.** The table must specify the units of measurement.
- **C.** The table should include meaningful percentages and ratios.
- **D.** The table should ideally fit on one page.

Answer Key and Explanations

1. Correct Answer: C. Determine the required document type, establish Mr. Davies as the user, and identify the report's purpose.

- **Explanation:** The initial 'Prepare' stage of report writing focuses on understanding the foundational elements of the report. This involves clarifying the type of document required, identifying the target audience (user) to tailor the language and assumed knowledge, and defining the overall objective or purpose of the report. These steps are essential before any planning or writing can commence effectively.

2. Correct Answer: B. In Appendices, referenced in the main report.

- **Explanation:** To maintain the clarity and readability of the main report, detailed calculations, extensive data, or supporting documentation that might otherwise interrupt the narrative flow should be placed in **appendices**. These appendices should then be clearly referenced within the main body of the report, allowing readers to consult them if they require more granular detail.

3. Correct Answer: C. The conclusion should never introduce new material.

- **Explanation:** A well-structured report's conclusion should summarise the analysis and provide recommendations based on the information already presented. It is crucial that **no new material or data is introduced in the conclusion**, as this can confuse the reader and undermine the logical flow of the report. Any new analysis should be integrated into the main 'Analysis' section.

4. Correct Answer: D. Component Bar Chart

- **Explanation:** A **component bar chart** is ideal for this scenario because it displays the total for a main category (e.g., regional sales) while also showing the breakdown of its constituent subgroups (e.g., product lines) within that total. The subgroups are stacked within a single bar, making it easy to see both the total and the individual contributions.

5. Correct Answer: D. To interpret the information to help management reach conclusions and potentially make suitable recommendations.

- **Explanation:** The role of a management accountant extends beyond merely presenting data. It critically involves **interpreting the information** contained within tables, charts, and graphs. This interpretation helps management understand the implications of the data, draw meaningful conclusions, and formulate appropriate recommendations for action.

6. Correct Answer: C. Reread the report, check it meets the document requirements, and ensure it is complete and clear.

- **Explanation:** The 'Review' stage is the final critical step before submission. It involves a comprehensive check of the entire report to ensure it fulfills all specified requirements, is free from errors, and communicates its message clearly and completely. This final scrutiny helps guarantee the report's quality and effectiveness.

7. Correct Answer: B. Compound (Multiple) Bar Chart

- **Explanation:** A **compound (or multiple) bar chart** is ideal for comparing discrete categories (like product lines) across different groups (like sales regions). It uses separate bars for each subgroup within a main category, allowing for a direct, side-by-side visual comparison of Product X and Product Y sales within each region.

8. Correct Answer: B. Pie Chart

- **Explanation:** Pie charts are circular graphs specifically designed to show the proportional or **relative contribution** of different subgroups to an overall category. They are highly effective for illustrating how different parts make up a whole, especially when there are a limited number of categories, typically six or fewer.

9. Correct Answer: A. Scatter Diagram

- **Explanation: Scatter diagrams** are specifically designed to illustrate the relationship or correlation between two quantitative variables. By plotting pairs of measurements on x and y axes, they allow for visual identification of patterns and the potential drawing of a line of best fit to indicate linear relationships.

10. Correct Answer: B. The table must specify the units of measurement.

- **Explanation:** For a table to be clear and understandable, it is essential to **specify the units of measurement** for all numerical data. This ensures that users correctly interpret the scale of the figures, such as whether they are in single units, thousands, or millions, and what currency or quantity they represent.

Service and operation costing

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

The Grand Hotel is evaluating its room service costs. In the peak season (July), the hotel had 5,000 occupied room-nights and incurred total room service costs of £25,000. In the off-peak season (January), it had 2,000 occupied room-nights with total room service costs of £16,000. The hotel believes some room service costs are fixed, while others vary with the number of occupied room-nights.

Using the high-low method, what is the fixed cost component of room service costs per month? Round your answer to the nearest whole number.

- **A.** £9,000
- **B.** £10,000
- **C.** £12,000
- **D.** £11,000

Question 2

Global Haulage Ltd operates a fleet of trucks transporting goods across the country. The company needs to calculate its cost per service unit to assess efficiency. In January, the company incurred total costs of £120,000 and transported 800,000 tonne-miles. In February, total costs were £135,000 for 1,000,000 tonne-miles. The company identifies that some costs are fixed, while others vary with the volume of goods transported and distance.

Using the high-low method, what is the variable cost per tonne-mile for Global Haulage Ltd? Round your answer to two decimal places.

- **A.** £0.10
- **B.** £0.08
- **C.** £0.07
- **D.** £0.09

Question 3

CleanSweep Services and **SparkleClean Co.** are two competing commercial cleaning companies. Both companies want to compare their operational efficiency and cost-effectiveness. CleanSweep calculates its

cost per square meter cleaned, while SparkleClean calculates its cost per hour of cleaning service. They both use different methods for allocating overheads.

Based on the information provided, what is the most significant barrier preventing CleanSweep Services and SparkleClean Co. from performing a meaningful service cost analysis?

- **A.** Their labour costs are probably not comparable.
- **B.** They are competing companies.
- **C.** They use different service cost units and non-uniform costing methods.
- **D.** Their total costs are likely different.

Question 4

LegalAid Solicitors provides legal advice and representation to clients. The firm's cost structure shows that a significant portion of its expenses relates to the salaries of its legal professionals, paralegals, and administrative staff. Other costs include office rent, utilities, and professional indemnity insurance. When analyzing costs, the firm notes that the direct costs are almost exclusively related to the time spent by fee-earning staff on client cases, while other costs are substantial.

Based on this scenario, which statement accurately reflects the typical cost structure in a service organisation like LegalAid Solicitors?

- **A.** Direct costs are evenly split between labour, materials, and expenses.
- **B.** Labour is often the only direct cost, and overheads frequently constitute the majority of the total cost.
- **C.** Overheads are negligible, with most costs being direct materials and labour.
- **D.** Materials are the only direct cost, and labour is a minor overhead.

Question 5

Sparkle Cleaners Ltd, a commercial cleaning service organisation, has recorded the following total costs and hours worked for two recent months:

- January: 800 cleaning hours, Total Cost £4,800
- February: 1,200 cleaning hours, Total Cost £6,000

The management believes some costs are semi-variable and wants to determine the variable cost per cleaning hour.

Using the high-low method, what is the variable cost per cleaning hour for Sparkle Cleaners Ltd?

- **A.** £2.00
- **B.** £5.00

- **C.** £3.00
- **D.** £4.00

Question 6

Organisations like hotels, hospitals, and accountancy firms provide outputs that are not physical goods. These types of entities require specific costing methods to accurately measure their operational efficiency and profitability.

For what primary purpose is service costing specifically used?

- **A.** To calculate the cost of raw materials in a production process.
- **B.** To apply continuous operation costing principles to organisations that produce intangible outputs.
- **C.** To determine the cost of manufacturing tangible products.
- **D.** To assess the market value of a company's shares.

Question 7

The Grand Hotel, a luxury accommodation service organisation, recorded total operating costs of £120,000 for the quarter. During the same quarter, the hotel had 3,000 occupied room-nights. The finance department needs to calculate the cost per occupied room-night.

What is the cost per occupied room-night for The Grand Hotel?

- **A.** £30.00
- **B.** £60.00
- **C.** £50.00
- **D.** £40.00

Question 8

MediCare Clinic provides specialist consultations. The clinic operates on an appointment basis, and each consultation slot, once booked, cannot be resold if the patient fails to attend. This means that an empty slot at a scheduled time represents lost revenue that cannot be recovered. This characteristic significantly impacts the clinic's capacity management and revenue planning.

Which characteristic of service organisations, as described, is most evident in MediCare Clinic's operations?

- **A.** Simultaneous Production and Consumption
- **B.** Intangibility
- **C.** Heterogeneity (Variability)

- **D.** Perishability

Question 9

FitnessFirst Gym offers various membership packages, allowing members access to facilities and classes. The gym has a fixed capacity for each class and for overall facility usage at any given time. If a member does not attend a booked class or visit the gym during their membership period, that potential usage slot cannot be transferred to another member or saved for later use by the same member. The opportunity for that specific service consumption is lost.

Which characteristic of service organisations is highlighted by the inability to store or transfer unused membership slots at FitnessFirst Gym?

- **A.** Heterogeneity (Variability)
- **B.** Perishability
- **C.** Intangibility
- **D.** Simultaneous Production and Consumption

Question 10

CityBus Transit operates a public transportation network within a metropolitan area. To effectively manage its costs and assess the efficiency of its routes, the company needs a cost unit that reflects both the number of individuals using the service and the distance they travel. This unit helps in understanding the true output of their service.

Which type of cost unit would be most appropriate for CityBus Transit to measure its service output?

- **A.** Cost per passenger-mile
- **B.** Cost per passenger
- **C.** Cost per hour of operation
- **D.** Cost per bus route

Answer Key and Explanations

1. Correct Answer: B. £10,000

- **Explanation:** First, calculate the variable cost per unit using the high-low method:
  Variable cost per unit = (High Activity Cost - Low Activity Cost) / (High Activity Units - Low Activity Units)
  Variable cost per room-night = (£25,000 - £16,000) / (5,000 - 2,000) = £9,000 / 3,000 = **£3.00 per room-night**.
  Next, calculate the fixed cost using either the high or low activity level:
  Using high activity (July): Total Cost = Fixed Cost + (Variable Cost per unit x Units)

£25,000 = Fixed Cost + (£3.00 x 5,000)
£25,000 = Fixed Cost + £15,000
Fixed Cost = £25,000 - £15,000 = **£10,000**.

2. Correct Answer: B. £0.08

- **Explanation:** The high-low method calculates variable cost per unit as (High Activity Cost - Low Activity Cost) / (High Activity Units - Low Activity Units).
  High activity: 1,000,000 tonne-miles, £135,000
  Low activity: 800,000 tonne-miles, £120,000
  Change in cost = £135,000 - £120,000 = £15,000
  Change in units = 1,000,000 - 800,000 = 200,000 tonne-miles
  Variable cost per tonne-mile = £15,000 / 200,000 = £0.075. Rounded to two decimal places, this is **£0.08**.

3. Correct Answer: C. They use different service cost units and non-uniform costing methods.

- **Explanation:** For meaningful cost comparisons (service cost analysis) to be performed, competing service organisations must use comparable service cost units and employ uniform costing methods. The scenario explicitly states they use different cost units ('cost per square meter cleaned' vs. 'cost per hour of cleaning service') and different overhead allocation methods, which are non-uniform costing methods.

4. Correct Answer: B. Labour is often the only direct cost, and overheads frequently constitute the majority of the total cost.

- **Explanation:** In service organisations, direct materials are often minimal or non-existent. The primary direct cost is typically the labour directly involved in delivering the service (e.g., the time spent by a lawyer on a client's case). Other significant costs like rent, utilities, and administrative salaries are usually classified as overheads, which often form the largest part of the total cost.

5. Correct Answer: C. £3.00

- **Explanation:** The high-low method is used to separate fixed and variable components of semi-variable costs. The change in cost (£6,000 - £4,800 = £1,200) is divided by the change in activity (1,200 - 800 = 400 hours). Variable cost per hour = £1,200 / 400 hours = **£3.00 per hour**. This method helps in understanding the cost structure of the organisation.

6. Correct Answer: B. To apply continuous operation costing principles to organisations that produce intangible outputs.

- **Explanation:** Service costing is a method specifically designed for organisations that provide services, which are intangible outputs. It adapts continuous operation costing principles to measure the costs associated with delivering these services, such as hotel stays, medical treatments, or legal advice.

7. Correct Answer: D. £40.00

- **Explanation:** The cost per service unit is calculated by dividing the total costs for providing the service by the number of service units used. £120,000 / 3,000 occupied room-nights = **£40.00 per occupied room-night**. This metric helps the organisation assess the efficiency of its accommodation services.

8. Correct Answer: D. Perishability

- **Explanation:** The inability to store a service or resell a missed appointment slot, leading to lost revenue, is a direct manifestation of the characteristic that services cannot be stored. This means that if the service is not consumed at the moment it is available, its economic value is lost forever, a concept known as **perishability**.

9. Correct Answer: B. Perishability

- **Explanation:** The scenario describes that if a service slot (like a class booking or gym access) is not used at the scheduled time, it cannot be stored or used later. This characteristic, where services cannot be stored and their value is lost if not consumed when available, is known as **perishability**.

10. Correct Answer: A. Cost per passenger-mile

- **Explanation:** A composite cost unit is used when the service output depends on two variables. For a public transport company, the service output depends on both the number of passengers and the distance they travel. Therefore, **'passenger-miles'** is the most appropriate composite cost unit.

Sources of data

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

A large online retailer collects vast amounts of data on customer browsing habits, purchase history, and product reviews. They analyze this data to personalize product recommendations, predict future sales trends with greater accuracy, and automate inventory replenishment based on anticipated demand.

Which three key uses of Big Data are demonstrated by the online retailer in this scenario?

- **A.** Distinguishing between primary and secondary data, and performing descriptive analysis.
- **B.** Reducing direct data capture costs, verifying data reliability, and processing raw data.
- **C.** Improving understanding of customer needs, enhancing forecasting reliability, and supporting automation.
- **D.** Collecting human/social data, transactional data, and machine/sensor data.

Question 2

A political party wants to gauge public opinion on an upcoming election. They instruct their volunteers to interview 100 people in a specific town, ensuring they speak to 50 males and 50 females, and that 30 of them are aged 18-30, 40 are aged 31-50, and 30 are over 50. The volunteers are free to choose who they interview as long as these targets are met.

Which sampling technique is being used, and what is a significant risk associated with it?

- **A.** Quota Sampling; it risks bias due to the interviewer's nonrandom selection.
- **B.** Random Sampling; it can be impractical for large populations.
- **C.** Stratified Sampling; it is difficult to ensure proportionality.
- **D.** Systematic Sampling; it may miss patterns if the interval coincides with a population characteristic.

Question 3

A market research firm is hired to survey public opinion on a new government policy across a country with diverse demographics. To ensure representation, they divide the population into age groups, income brackets, and geographical regions, then randomly select a proportional number of individuals from each group to interview.

Which sampling technique is the firm employing, and what is a key benefit of this approach?

- **A.** Systematic Sampling; ensures every Nth person is selected.
- **B.** Stratified Sampling; ensures representation from distinct subgroups.
- **C.** Quota Sampling; allows interviewers flexibility in choosing respondents.
- **D.** Cluster Sampling; simplifies data collection by focusing on specific groups.

Question 4

A startup company is developing a new eco-friendly product and is researching market trends and consumer preferences. To save costs, they rely heavily on publicly available government reports and old market research studies found online.

What is a significant caution the startup should exercise when relying on these sources of information?

- **A.** The data might be too expensive to acquire.
- **B.** The data may be outdated, incomplete, or unreliable due to lack of control over its collection methodology.
- **C.** The data may be too specific to their product.
- **D.** The data will likely be primary data, which is harder to analyze.

Question 5

A marketing department wants to understand the average age of their customers and the most common product purchased. They also want to use a sample of customer feedback to predict the overall satisfaction level of their entire customer base with a new product feature.

Which two types of analysis are the marketing department planning to perform?

- **A.** Descriptive analysis and Inferential analysis
- **B.** Inferential analysis and Categorical analysis
- **C.** Descriptive analysis and Numerical analysis
- **D.** Primary analysis and Secondary analysis

Question 6

A global e-commerce giant processes billions of transactions daily, including customer purchases, website clicks, and product reviews. The company needs to analyze this information in real-time to recommend products and detect fraudulent activities instantly. The data comes in various formats, from structured database entries to unstructured text reviews.

Which two characteristics of Big Data are most prominently highlighted in this scenario?

- **A.** Variety and Veracity
- **B.** Value and Volume
- **C.** Veracity and Value
- **D.** Volume and Velocity

Question 7

A large UK university wants to conduct a survey to understand student satisfaction with its academic support services. To ensure that all academic disciplines are proportionally represented in the survey, the research team first divides the entire student population into distinct groups based on their faculty (e.g., Arts, Sciences, Engineering). They then randomly select a certain number of students from each faculty, ensuring the sample size from each group reflects its proportion in the overall student body.

Which sampling technique is being used by the university?

- **A.** Random sampling
- **B.** Systematic sampling
- **C.** Stratified sampling
- **D.** Cluster sampling

Question 8

A small local bakery uses a spreadsheet to track daily sales of its 10 most popular items. The data is manually entered at the end of each day and is used to calculate weekly totals.

Does this scenario describe an application of Big Data, and why or why not?

- **A.** No, because it only tracks 10 items.
- **B.** No, because the data volume is small and processing is conventional.
- **C.** Yes, because data is collected daily.
- **D.** Yes, because it involves tracking sales data.

Question 9

A human resources department categorizes employees by their department (e.g., 'Sales', 'Marketing', 'Finance', 'Operations'). These categories are used for labeling purposes only and do not imply any order or ranking among the departments.

What type of categorical data is the HR department using to classify employees?

- **A.** Nominal data
- **B.** Discrete data
- **C.** Continuous data
- **D.** Ordinal data

Question 10

A company has recently implemented a new system where employees use handheld scanners to record inventory movements in the warehouse. Additionally, the company subscribes to a service that provides daily updates on competitor pricing and market trends.

Which two types of data capture costs are exemplified in this scenario?

- **A.** Indirect data capture costs and Secondary data costs
- **B.** Direct data capture costs and Primary data costs
- **C.** Transactional data costs and External data costs
- **D.** Direct data capture costs and Indirect data capture costs

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Answer Key and Explanations

1. Correct Answer: C. Improving understanding of customer needs, enhancing forecasting reliability, and supporting automation.

- **Explanation:** Personalizing product recommendations directly relates to **improving the understanding of customer needs**. Predicting future sales trends with greater accuracy is a clear example of **enhancing forecasting reliability**. Automating inventory replenishment based on anticipated demand demonstrates how Big Data **supports automation**.

2. Correct Answer: A. Quota Sampling; it risks bias due to the interviewer's nonrandom selection.

- **Explanation:** When interviewers are instructed to fill specific, nonrandom quotas (e.g., 50 males, 50 females, specific age groups) but have discretion in selecting individuals, this is **Quota Sampling**. A significant risk with this method is the introduction of bias because the interviewer's choices are not truly random.

3. Correct Answer: B. Stratified Sampling; ensures representation from distinct subgroups.

- **Explanation:** Dividing the population into distinct groups (strata) based on demographics and then sampling randomly from these in proportion to their size is the definition of **Stratified Sampling**. This method is specifically used to ensure that all relevant subgroups are adequately represented in the sample.

4. Correct Answer: B. The data may be outdated, incomplete, or unreliable due to lack of control over its collection methodology.

- **Explanation:** Publicly available government reports and old market research studies are examples of secondary data. A significant caution when using secondary data is that it may be **outdated, incomplete, or unreliable** because the user has no control over how it was originally collected or its methodology.

5. Correct Answer: A. Descriptive analysis and Inferential analysis

- **Explanation:** Summarizing data characteristics like the average age or most common product is **Descriptive analysis**. Using a random sample to make inferences or test hypotheses about the larger population, such as predicting overall customer satisfaction from a sample, is **Inferential analysis**.

6. Correct Answer: D. Volume and Velocity

- **Explanation:** The processing of billions of transactions daily clearly indicates a massive **Volume** of data. The requirement to analyze this information in **real-time** for instant recommendations and fraud detection highlights the crucial characteristic of **Velocity**.

7. Correct Answer: C. Stratified sampling

- **Explanation: Stratified sampling** involves dividing the population into distinct groups ('strata') and then sampling randomly from these in proportion to their size. The university dividing students by faculty and then sampling proportionally from each group is an example of this.

8. Correct Answer: B. No, because the data volume is small and processing is conventional.

- **Explanation:** Big Data refers to extremely large, complex data collections that require nonconventional storage and processing methods. The scenario describes a small volume of data managed with conventional tools (a spreadsheet), which does **not** fit the definition of Big Data.

9. Correct Answer: A. Nominal data

- **Explanation: Nominal data** is used for labelling without quantitative value and does not imply any order or ranking. Classifying employees by department, where departments like 'Sales' or 'Marketing' are simply labels without inherent order, is an example of Nominal data.

10. Correct Answer: D. Direct data capture costs and Indirect data capture costs

- **Explanation:** Costs incurred when directly inputting data, such as employees scanning bar codes for inventory, are considered **Direct data capture costs**. The cost of purchasing data, like subscribing to a service for market trends, falls under **Indirect data capture costs**.

Spreadsheets

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

A management accountant is setting up a sales commission calculation for a UK firm. The commission rate is fixed at 5% and is stored in cell B1. Sales figures for individual salespersons are listed in column A, starting from cell A2. The accountant needs to enter a formula into cell B2 to calculate the commission for the first salesperson, and then copy this formula down column B to calculate commission for all other salespersons. The formula must ensure that the reference to the commission rate in cell B1 remains constant for all calculations, while the sales figure reference adjusts for each salesperson.

Which formula, when entered into cell B2 and then copied down, will correctly reference the fixed commission rate and the relative sales figures?

- **A.** =A2*B1
- **B.** =A2*B$1
- **C.** =A2*$B$1
- **D.** =$A2*B1

Question 2

A company's management accounting department uses spreadsheets for performance reporting and variance analysis. For the last month, the budgeted direct material cost was £15,000 for 1,000 units of production. Actual production for the month was 1,050 units, and the actual direct material cost incurred was £16,200.

What is the direct material cost variance for the month, based on these figures?

- **A.** £450 Adverse
- **B.** £750 Favourable
- **C.** £450 Favourable
- **D.** £750 Adverse

Question 3

A company's financial data is organized across two spreadsheet sheets. **Sheet1** contains raw data, with total sales revenue in cell B10 and cost of goods sold in cell B11. **Sheet2** is designated for performance reporting. The finance director wants to calculate the gross profit margin (Gross Profit / Sales Revenue) on Sheet2, with Gross Profit being Sales Revenue - Cost of Goods Sold.

If cell A1 on Sheet2 is where the gross profit margin should be displayed, which formula would correctly calculate this ratio, assuming sales revenue is £500,000 and cost of goods sold is £300,000? Round to two decimal places.

- **A.** =Sheet1!B10/Sheet1!B11
- **B.** =Sheet1!B10-Sheet1!B11/Sheet1!B10
- **C.** =(Sheet1!B10-Sheet1!B11)/Sheet1!B10
- **D.** =Sheet1!B10-Sheet1!B11

Question 4

A small UK retailer uses a spreadsheet to manage its inventory valuation. At the end of the month, the following inventory items are recorded in the spreadsheet:

Item	Quantity	Unit Cost (£)
Item A	10	25
Item B	15	18
Item C	5	40

What is the total value of the inventory at the end of the month, according to the spreadsheet data?

- **A.** £780
- **B.** £750
- **C.** £720
- **D.** £690

Question 5

A company is preparing its budget. Sales figures for three products are in cells B2, B3, and B4. The total sales for all products are in cell B5. The finance team wants to calculate the percentage contribution of each product to the total sales in cells C2, C3, and C4. The formula for Product 1 (in C2) is **=B2/B5**.

To correctly copy this formula down to C3 and C4 for the other products, ensuring the total sales reference remains fixed, what should the formula in C2 be before copying? Round percentages to two decimal places.

- **A.** =B2/B5
- **B.** =$B2/B5
- **C.** =B2/$B$5
- **D.** =$B$2/$B$5

Question 6

A large UK retail chain is considering how to store its vast amount of historical sales transaction data, which spans several years and involves millions of individual records. The management team is debating between using a complex spreadsheet system or implementing a dedicated database.

Based on the typical characteristics of spreadsheets, why might a database be a more suitable choice for this specific data storage requirement for the accounting department?

- **A.** Spreadsheets are vulnerable to cyberattack.
- **B.** Spreadsheets are difficult to use for data manipulation.
- **C.** Spreadsheets lack built-in graphing functions.
- **D.** Spreadsheets are restricted to a finite number of records.

Question 7

A management accountant is creating a new spreadsheet to calculate the average monthly expenditure for various cost centres. They need to input a formula into a cell to perform this calculation automatically, ensuring the spreadsheet software recognises it as an instruction to compute.

What character must every formula in a spreadsheet begin with to ensure it is recognised as a calculation?

- **A.** =
- **B.** #
- **C.** $
- **D.** @

Question 8

A small business is growing rapidly and needs to manage its customer information, including contact details, purchase history, and preferences. They are debating whether to use a spreadsheet or a database system for this purpose.

Based on the typical applications of spreadsheets, why might a database be a more suitable choice for managing this extensive customer information?

- **A.** Spreadsheets are better for 'crunching' numbers.
- **B.** Spreadsheets provide built-in graphing functions.
- **C.** Databases offer more detailed sorting and querying abilities.
- **D.** Spreadsheets are designed for long-term storage of large amounts of raw data.

Question 9

A company uses a spreadsheet to calculate its projected profit. Sales revenue is in cell B2 (£100,000), variable costs are in B3 (£60,000), and fixed costs are in B4 (£20,000). Profit is calculated in B5 as **=B2-B3-B4**. The management is considering a scenario where variable costs increase by 10% due to raw material price hikes.

If the variable costs in cell B3 increase by 10%, what will be the new projected profit in cell B5?

- **A.** £18,000
- **B.** £14,000
- **C.** £20,000
- **D.** £24,000

Question 10

A management accountant is analysing the monthly sales figures for a product. The sales for the last four months are recorded in cells C2, C3, C4, and C5 as £1,200, £1,500, £1,100, and £1,400 respectively. The accountant wants to find the total sales for these four months to assess overall performance.

Which formula, using a common spreadsheet function, would correctly calculate the total sales for these four months?

- **A.** =MIN(C2:C5)
- **B.** =AVERAGE(C2:C5)
- **C.** =MAX(C2:C5)
- **D.** =SUM(C2:C5)

Answer Key and Explanations

1. Correct Answer: B. =A2*B$1

- **Explanation:** When a formula is copied down, cell references change automatically (relative copying). To keep the reference to the commission rate in cell B1 fixed, the **row number (1) must be locked** using a dollar sign, making it **B$1**. The column reference (B) does not need to be locked as the formula is only copied down within the same column. The sales figure (A2) should remain relative to adjust for each salesperson's data.

2. Correct Answer: A. £450 Adverse

- **Explanation:** First, calculate the standard cost per unit: £15,000 / 1,000 units = **£15 per unit**. Next, calculate the standard cost for actual production: 1,050 units * £15/unit = **£15,750**. Finally, calculate

the variance: Actual Cost (£16,200) - Standard Cost for Actual Production (£15,750) = **£450**. Since actual cost is higher than standard cost, it is an **adverse** variance.

3. Correct Answer: C. =(Sheet1!B10-Sheet1!B11)/Sheet1!B10

- **Explanation:** To calculate gross profit margin, you need to first calculate gross profit (Sales Revenue - Cost of Goods Sold) and then divide it by Sales Revenue. When referencing cells on another sheet, the sheet name followed by an exclamation mark (!) precedes the cell reference (e.g., **Sheet1!B10**). **Parentheses are crucial** to ensure the gross profit calculation is performed before the division.

4. Correct Answer: C. £720

- **Explanation:** To calculate the total inventory value, multiply the quantity by the unit cost for each item and sum the results.
    - Item A: 10 * £25 = £250
    - Item B: 15 * £18 = £270
    - Item C: 5 * £40 = £200
      The total inventory value is £250 + £270 + £200 = **£720**. This is a common application of spreadsheets in management accounting for inventory management.

5. Correct Answer: C. =B2/$B$5

- **Explanation:** To ensure that the reference to the total sales (B5) does not change when the formula is copied, **absolute referencing** must be used. This is achieved by placing dollar signs ($) before both the column and row reference (**$B$5**). The reference to the individual product's sales (B2) should remain relative so it adjusts for each product.

6. Correct Answer: D. Spreadsheets are restricted to a finite number of records.

- **Explanation:** Spreadsheets are designed primarily for 'crunching' numbers and storing single list items, rather than being suitable for long-term storage of large amounts of raw data, which is better suited to a database. They are **restricted to a finite number of records**, making them less ideal for managing millions of historical transactions.

7. Correct Answer: A. =

- **Explanation:** Formulae are one of the most useful functions in a spreadsheet, allowing calculations to happen automatically. They always start with an **equal sign (=)** to signal to the software that the cell contains a calculation, not just text or a number. This is a fundamental feature for data manipulation in management accounting.

8. Correct Answer: C. Databases offer more detailed sorting and querying abilities.

- **Explanation:** While spreadsheets are excellent for manipulating data in rows and columns and 'crunching' numbers, they are not ideal for long-term storage of large amounts of raw data or for

complex data management. **Databases** are better suited for such tasks due to their superior **detailed sorting and querying capabilities**.

9. Correct Answer: B. £14,000

- **Explanation:** Initially, profit is £100,000 (Sales) - £60,000 (Variable Costs) - £20,000 (Fixed Costs) = £20,000. If variable costs increase by 10%, the new variable costs will be £60,000 x 1.10 = **£66,000**. The new projected profit will then be £100,000 - £66,000 - £20,000 = **£14,000**. This demonstrates 'what if?' analysis.

10. Correct Answer: D. =SUM(C2:C5)

- **Explanation:** Formulae in spreadsheets can use functions like SUM, AVERAGE, MIN, and MAX. To calculate the total sales, the **SUM** function is appropriate, which adds up all the values within the specified range (C2 to C5). This is a fundamental calculation for sales performance analysis in management accounting.

Standard costing

Instructions: Please answer the following questions to the best of your ability. The correct answer, along with a detailed explanation, is provided at the end of this chapter.

Question 1

Artisan Crafts produces handmade pottery. The standard variable overhead rate is £8 per direct labour hour. For a batch of 50 pots, the standard labour hours are 10. In June, the company produced 100 pots, using 22 actual direct labour hours.

What is the variable overhead efficiency variance for June?

- **A.** £24 Adverse
- **B.** £16 Favourable
- **C.** £16 Adverse
- **D.** £24 Favourable

Question 2

Precision Parts Ltd manufactures components. The budgeted production for August was 5,000 units. The standard fixed overhead absorption rate is £10 per unit. Actual production in August was 4,800 units. The company uses absorption costing. The production manager needs to understand the impact of production volume on fixed overhead absorption.

What is the fixed overhead volume variance for August?

- **A.** £2,000 Favourable
- **B.** £4,800 Adverse
- **C.** £4,800 Favourable
- **D.** £2,000 Adverse

Question 3

Speedy Deliveries operates a parcel sorting facility. The standard time to sort 100 parcels is 5 hours. In April, the facility sorted 20,000 parcels, taking a total of 1,050 actual labour hours. The standard labour rate is £15 per hour. The operations manager wants to assess the efficiency of the sorting process.

What is the labour efficiency variance for April?

- **A.** £750 Favourable

- **B.** £1,500 Favourable
- **C.** £750 Adverse
- **D.** £1,500 Adverse

Question 4

Neptune Foods produces a snack bar. The standard cost card specifies 0.2 kg of a special ingredient per bar at £5 per kg. Last month, Neptune Foods produced 10,000 bars. They actually used 2,200 kg of the special ingredient, which was purchased at a lower price of £4.50 per kg, resulting in a favourable materials price variance. However, the production manager noted that the cheaper ingredient was of slightly inferior quality, leading to more waste during processing.

What is the *Materials Usage Variance* for the month, and what does it suggest about the interrelationship with the materials price variance?

- **A.** £1,100 Adverse; it confirms that the materials were too expensive.
- **B.** £1,000 Favourable; it shows the price variance was justified.
- **C.** £1,000 Adverse; it suggests the favourable price variance might have led to an adverse usage variance due to quality issues.
- **D.** £1,100 Favourable; it indicates efficient use of materials.

Question 5

Eco-Friendly Packaging produces biodegradable containers. The standard material usage for one batch of containers is 100 kg. During November, the company produced 150 batches, using a total of 15,500 kg of material. The standard cost of the material is £5.00 per kg. The production manager wants to assess the efficiency of material usage.

What is the materials usage variance for November?

- **A.** £500 Adverse
- **B.** £2,500 Favourable
- **C.** £2,500 Adverse
- **D.** £500 Favourable

Question 6

Epsilon Ltd operates a standard costing system under absorption costing. Budgeted fixed overheads were £90,000 for 15,000 budgeted machine hours, producing 7,500 units. Each unit is expected to take 2 standard

machine hours. In the last period, actual fixed overheads were £92,000. The company actually worked 14,800 machine hours and produced 7,600 units.

What is the *Fixed Overhead Efficiency Variance* for the period?

- **A.** £1,200 Favourable
- **B.** £2,400 Adverse
- **C.** £1,200 Adverse
- **D.** £2,400 Favourable

Question 7

CleanSweep Services provides commercial cleaning. The standard variable overhead rate is £5 per direct labour hour. In May, the company incurred actual variable overheads of £10,500 for 2,000 actual direct labour hours. The finance team needs to analyse the variable overhead costs.

What is the variable overhead expenditure variance for May?

- **A.** £500 Favourable
- **B.** £1,000 Adverse
- **C.** £500 Adverse
- **D.** £1,000 Favourable

Question 8

Digital Innovations produces software licenses. The budgeted sales volume for February was 500 licenses, with a standard contribution of £50 per license. Actual sales for February were 550 licenses. The company uses marginal costing. The sales team needs to understand the effect of the sales volume on total contribution.

What is the sales volume variance for February?

- **A.** £2,500 Favourable
- **B.** £2,750 Adverse
- **C.** £2,500 Adverse
- **D.** £2,750 Favourable

Question 9

MachineWorks operates a fabrication plant. The budgeted operating hours for September were 2,000 hours. The standard fixed overhead absorption rate is £25 per hour. Actual operating hours in September were 1,900 hours. The company uses absorption costing. The operations director wants to assess whether the budgeted hours were worked.

What is the fixed overhead capacity variance for September?

- **A.** £1,900 Favourable
- **B.** £1,900 Adverse
- **C.** £2,500 Adverse
- **D.** £2,500 Favourable

Question 10

Home Comfort Furniture manufactures bespoke sofas. The budgeted sales volume for January was 100 units, with a standard profit of £300 per sofa. Actual sales for January were 90 units. The company uses absorption costing. The management wants to evaluate the impact of the sales volume on overall profitability.

What is the sales volume variance for January?

- **A.** £2,700 Favourable
- **B.** £2,700 Adverse
- **C.** £3,000 Favourable
- **D.** £3,000 Adverse

Answer Key and Explanations

1. Correct Answer: C. £16 Adverse

- **Explanation:** The variable overhead efficiency variance measures the profit effect of using more or less labour time than standard for the actual production achieved, valued at the standard variable overhead rate. Standard hours for actual production (100 pots) = (100 / 50) × 10 hours = 2 × 10 hours = **20 hours**. The variance is (Actual Hours - Standard Hours for Actual Production) × Standard Variable Overhead Rate. So, (22 hours - 20 hours) × £8/hour = 2 hours × £8/hour = **£16 Adverse**, as more hours were used than planned, increasing variable overhead cost.

2. Correct Answer: D. £2,000 Adverse

- **Explanation:** Under absorption costing, the fixed overhead volume variance reflects the difference between actual and budgeted activity levels, valued at the standard absorption rate. It is calculated as (Actual Production Units - Budgeted Production Units) × Standard Fixed Overhead Absorption Rate per Unit. So, (4,800 units - 5,000 units) × £10/unit = -200 units × £10/unit = **-£2,000**, which is

an **adverse** variance because actual production was lower than budgeted, leading to under-absorption of fixed overheads.

3. Correct Answer: C. £750 Adverse

- **Explanation:** The labour efficiency variance measures the profit effect of using more or less labour time than standard for the actual production achieved. Standard hours for actual production (20,000 parcels) = (20,000 / 100) × 5 hours = 200 × 5 hours = **1,000 hours**. The variance is (Actual Hours - Standard Hours for Actual Production) × Standard Rate. So, (1,050 hours - 1,000 hours) × £15/hour = 50 hours × £15/hour = **£750 Adverse**, as more hours were used than planned, increasing labour cost.

4. Correct Answer: C. £1,000 Adverse; it suggests the favourable price variance might have led to an adverse usage variance due to quality issues.

- **Explanation:** The Materials Usage Variance is calculated as (Standard Quantity for Actual Production - Actual Quantity Used) × Standard Price. Standard quantity for actual production = 10,000 units × 0.2 kg/unit = **2,000 kg**. So, (2,000 kg - 2,200 kg) × £5/kg = **£1,000 Adverse**. This adverse variance, despite a favourable materials price variance from using cheaper material, suggests an interrelationship where the lower quality of the cheaper material led to increased waste and thus an adverse usage variance.

5. Correct Answer: C. £2,500 Adverse

- **Explanation:** The materials usage variance measures the profit effect of using more or less material than standard for the actual production achieved. Standard quantity for actual production = 150 batches × 100 kg/batch = **15,000 kg**. The variance is (Actual Quantity Used - Standard Quantity for Actual Production) × Standard Price. So, (15,500 kg - 15,000 kg) × £5.00/kg = 500 kg × £5.00/kg = **£2,500 Adverse**, as more material was used than planned, increasing the cost.

6. Correct Answer: D. £2,400 Favourable

- **Explanation:** The Fixed Overhead Efficiency Variance measures the effect of taking more or less time than standard for the actual output achieved. It is calculated as (Standard Hours for Actual Production - Actual Hours) × Standard Fixed Overhead Absorption Rate per Hour. The standard rate is £90,000 / 15,000 hours = **£6 per hour**. Standard hours for actual production = 7,600 units × 2 hours/unit = **15,200 hours**. Therefore, (15,200 - 14,800) × £6 = **£2,400 Favourable**.

7. Correct Answer: C. £500 Adverse

- **Explanation:** The variable overhead expenditure variance measures the difference between actual variable overheads and the standard variable overheads allowed for actual hours worked. Standard variable overheads for actual hours = 2,000 hours × £5/hour = **£10,000**. The variance is Actual Variable Overheads - (Actual Hours × Standard Rate). So, £10,500 - £10,000 = **£500 Adverse**, as actual expenditure was higher than the standard allowed for the actual activity.

8. Correct Answer: A. £2,500 Favourable

- **Explanation:** Under marginal costing, the sales volume variance measures the effect on contribution of the difference between actual and budgeted sales volume. It is calculated as (Actual Sales Volume - Budgeted Sales Volume) × Standard Contribution per Unit. So, (550 licenses - 500 licenses) ×

£50/license = 50 licenses × £50/license = **£2,500 Favourable**, as actual sales were higher than budgeted, increasing contribution.

9. Correct Answer: C. £2,500 Adverse

- **Explanation:** Under absorption costing, the fixed overhead capacity variance measures whether budgeted hours were worked. It is calculated as (Actual Hours - Budgeted Hours) × Standard Fixed Overhead Absorption Rate per Hour. So, (1,900 hours - 2,000 hours) × £25/hour = -100 hours × £25/hour = **-£2,500**, which is an **adverse** variance as fewer hours were worked than budgeted, indicating under-utilisation of capacity.

10. Correct Answer: D. £3,000 Adverse

- **Explanation:** Under absorption costing, the sales volume variance measures the effect on profit of the difference between actual and budgeted sales volume. It is calculated as (Actual Sales Volume - Budgeted Sales Volume) × Standard Profit per Unit. So, (90 units - 100 units) × £300/unit = -10 units × £300/unit = **-£3,000**, which is an **adverse** variance as actual sales were lower than budgeted, reducing profit.