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Cost Behaviour

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? Concepts and definitions questions

1.1 Distinguish between

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

1.2 State six different benefits of cost accounting.

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

1.3 Complete the following statements.

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

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

$$Y = a + bX$$

$$a =$$

$$b =$$

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

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

1.6 Distinguish between

- (i) Interpolation
- (ii) Extrapolation

1.7 State four limitations of using historical costs to estimate costs to be incurred in the future.

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

1.8 The variable production cost per unit of product B is £2 and the fixed production overhead is £4,000. The total production cost of producing 3,000 units of B in a period is £ _____.

1.9 Describe the scattergraph method of analysing a semi-variable cost into its fixed and variable elements.

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

✓ Concepts and definitions solutions

- 1.1 (i) “Financial accounting” is the recording of financial transactions of a firm and a summary of their financial statements within an accounting period for the use of individuals and institutions who wish to analyse and interpret these results.
 (ii) “Cost accounting” involves a careful evaluation of the resources used within an organisation. The techniques employed help to provide financial information about the performance of a business and the likely direction which it will take.
 (iii) “Management accounting” is essentially concerned with offering advice to management based on financial information gathered and would include budgeting, planning and decision-making.

1.2 Benefits of cost accounting

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

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

1.4 Fixed and variable costs

a = Fixed cost
 b = Variable cost

1.5 High–low method

	<i>Units</i>	<i>Cost</i>
Highest month	900	£2,000
Lowest month	<u>400</u>	<u>£1,000</u>
	500	£1,000

The additional cost between the highest and lowest month

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

So taking either higher or lower number

Higher $900 \times £2 = £1,800$	so fixed cost = £200
Lower $400 \times £2 = £800$	so fixed cost = £200

Under exam conditions choose the number which is easier to calculate.

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1.6 Interpolation and Extrapolation

- (i) When a high-low or graphical method has been used to identify the fixed and variable elements of a cost then this may form the basis for cost estimates at different levels of activity.
- (ii) When the level of activity is within the range of activity for which data has been recorded this is known as interpolation.
- (iii) When the level of activity is outside the range of activity for which data has been recorded this is known as extrapolation. This estimate is less likely to be accurate because the assumption that cost behaviour patterns apply outside the recorded range of activities might not be valid.

1.7 Limitations of using historical costs

- (i) Difficult and costly to obtain sufficient data to be sure that a representative sample is used.
- (ii) Implies a continuing relationship of costs to volume.
- (iii) Based on linear relationship between costs and activity.
- (iv) Events in the past may not be representative of the future.

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

- 1.9
- (i) Axes are drawn where the vertical (y) axis is the total cost and the horizontal (x) axis is the level of activity.
 - (ii) All recorded data pairs are plotted on the graph as separate points.
 - (iii) The straight line of best fit is drawn by eye between the plotted points.
 - (iv) The line of best fit is extrapolated back to cross the y axis. The point where the extrapolated line cuts the vertical axis can be read off as the fixed element of the cost.
 - (v) The variable element of the cost is established by determining the gradient of the line of best fit.

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

? Multiple choice questions

- 1.1 Which of the following are prime costs?
- (i) Direct materials
 - (ii) Direct labour
 - (iii) Indirect labour
 - (iv) Indirect expenses
- A (i) and (ii)
 - B (i) and (iii)
 - C (ii) and (iii)
 - D (ii) and (iv)
- 1.2 Which of the following could not be classified as a cost unit?
- A Ream of paper
 - B Barrel of beer
 - C Chargeable man-hour
 - D Hospital
- 1.3 Which of the following could be a step fixed cost?
- A Direct material cost
 - B Electricity cost to operate a packing machine
 - C Depreciation cost of the packing machine
 - D Depreciation cost of all packing machines in the factory
- 1.4 Which of the following would be classified as indirect labour?
- A Assembly workers in a car plant
 - B Bricklayers in a building company
 - C Stores assistants in a factory
 - D An auditor in a firm of accountants
- 1.5 Which of the following would not be classified as a cost centre in a hotel?
- A Restaurant
 - B Rooms
 - C Bar
 - D Meals served
- 1.6 The information below shows the number of calls made and the monthly telephone bill for the first quarter of the latest year:
- | <i>Month</i> | <i>No. of calls</i> | <i>Cost</i> |
|--------------|---------------------|-------------|
| January | 400 | £1,050 |
| February | 600 | £1,700 |
| March | 900 | £2,300 |

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

- A Fixed cost £50 Variable cost per call £2.50
- B Fixed cost £50 Variable cost per call £25
- C Fixed cost £25 Variable cost per call £2.50
- D Fixed cost £25 Variable cost per call £25

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

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

The variable overhead rate was £5 per hour.

The amount of fixed overhead was

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

1.8 Fixed costs are conventionally deemed to be:

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

1.9 Which of the following correctly describes a step cost?

- A The total cost increases in steps as the level of inflation increases
- B The cost per unit increases in steps as the level of inflation increases
- C The cost per unit increases in steps as the level of activity increases
- D The total cost increases in steps as the level of activity increases

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

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

✓ Multiple choice solutions

1.1 A

Prime costs consist of direct materials, direct labour and direct expenses.

1.2 D

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

1.3 D

Cost D could behave in a step fashion over a period of time. The total depreciation cost would remain fixed for a certain number of machines. If an additional machine is required the total cost will increase to a higher level at which it will again remain constant. The addition of further machines will increase the total depreciation cost in successive steps. Cost A is a variable cost, cost B is a semi-variable cost and cost C is a fixed cost.

1.4 C

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

1.5 D

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

1.6 A

	<i>Calls</i>	<i>Cost</i>
Highest	900	£2,300
Lowest	400	£1,050
	<u>500</u>	<u>£1,250</u>

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

$$\begin{aligned} \text{Fixed cost} &= \text{Total cost} - \text{variable cost} \\ &= £1,050 - (400 \times £2.50) \\ &= £1,050 - £1,000 \\ &= £50 \end{aligned}$$

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

1.7 D

The calculation is as follows:

$$\begin{aligned} \text{Total cost for 18,000 hours} &= £380,000 \\ \text{Variable cost} &= 18,000 \times 5 = \underline{£90,000} \\ \text{Fixed costs} &= \underline{\underline{£290,000}} \end{aligned}$$

1.8 B

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

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1.9 **D**

Cost behaviour patterns refer to the way that the cost behaves in relation to the level of activity. Therefore options A and B are incorrect. Option C describes a non-linear variable cost.

1.10 **C**

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