Cost Classification, Concepts and Terminology
Absorption and Marginal Costing

Quiz

(Questions)

Time allowed: 40 minutes

Section A (Short Questions)

(1) (a) What is the difference between direct and indirect costs? (2 marks)
(b) Can the same cost be direct for one purpose and indirect for another? Give an example. (1 mark)

(2) Ada Company had the following information for estimating the production costs for 2019. The maximum production level was 40,000 bottles of lemon juice.

Direct materials	0.4 liters per bottle at $10 per liter
Direct labour	0.1 hours per bottle at $35 per hour

In the production process, only the following three types of production overheads are incurred, each of which demonstrating a different cost behaviour. Information relating to production overheads at different production levels was shown as follows:

Production level (bottles)		10,000	20,000	30,000	40,000
		$	$	$	$
Production overheads:	Type A	197,500	197,500	197,500	197,500
	Type B	200,000	200,000	250,000	250,000
	Type C	205,000	210,000	215,000	220,000

Required:
(a) Identify and describe the cost behaviour for each of the three types of production overheads. (3 marks)
(b) If the company decided to produce 35,000 bottles for 2019, calculate the average cost of producing one bottle of lemon juice. (3 marks)
(Total: 9 marks)

Section B (Long Question)

(3) Shirley Company commenced business on 1 January 2018 to produce a special type of portable storage device (USB). The company planned to produce and sell 30,000 units during the year and provided the following estimates:

	$'000	$'000
Sales		750
Less: Cost of goods sold		
Direct materials	300	
Direct labour	75	
Variable production overheads	60	
Fixed production overheads	120	555
Gross profit		195
Less: Fixed selling and administrative overheads		90
Net operating income		105

The company computes its predetermined fixed production overhead absorption rate annually based on its direct labour cost. During the year, 28,000 units were made and 23,000 units were sold at the estimated selling price. Actual costs were incurred on the same basis as the estimated cost structure.

Required:

(a) Calculate the company's predetermined fixed production overhead absorption rate for the year.
(2 marks)

(b) Calculate the amount of under-absorbed or over-absorbed fixed production overheads for the year.
(3 marks)

(c) Prepare an income statement for the year ended 31 December 2018 using absorption costing.
(6 marks)

(d) Prepare an income statement for the year ended 31 December 2018 using marginal costing.
(6 marks)

(e) Explain the reason for any difference in the ending inventory balances under the two costing methods and the impact of this difference on the reported net operating profits in (c) and (d).
(3 marks)

(Total: 20 marks)

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(Suggested Solution)

Section A

(1a) A direct cost is one that can be easily and accurately traced to the cost object, *(1)* and an indirect cost cannot be easily and accurately traced to the cost object. *(1)* *(2 marks)*

(1b) Sometimes the same cost can be treated as direct cost for one purpose and indirect cost for another. For example, ABC Company has four branches in Hong Kong. Each branch sells a variety of food products. The salary of the manager of Shatin branch would be an indirect cost of a particular product but a direct cost of the branch as a whole.

- *Any relevant example (1)* *(1 mark)*

(2a) Type A is a fixed cost *(0.5)* which does not change regardless of the level of production *(0.5)*. Type B is a step cost *(0.5)* which does not change within a relevant range of activity and jumps to a higher level when the production level reaches 30,000 units *(0.5)*. Type C is a mixed cost *(0.5)* which consists of fixed and variable elements *(0.5)*. *(3 marks)*

(2b) The average cost per bottle:

	$
Direct materials ($10 x 0.4)	4
Direct labour ($35 x 0.1)	3.5
Production overheads $(197,500 + 250,000 + 217,500) ÷ 35,000	19*
Cost per bottle	26.5

(3 marks)

** Total production overheads at 35,000 bottles:*
Fixed cost = $197,500
Step cost = $250,000
*Mixed cost** = $200,000 + $0.5 x 35,000 = $217,500*
***Variable component: ($210,000 – $205,000) ÷ (20,000 – 10,000) = $0.5 per bottle*
Fixed component: $210,000 – $0.5 x 20,000 = $200,000

(Total: 9 marks)

Section B

(3a) Predetermined fixed production overhead absorption rate
= $120,000 / $75,000
= $1.6 per direct labour dollar *(2 marks)*

(3b)

		$	
Actual fixed production overheads	=	120,000	*(1)*
Less: Absorbed fixed production overheads ($1.6 x $2.5* x 28,000)	=	112,000	*(1)*
Under-absorbed fixed production overheads		8,000	*(1)*

(3 marks)

**Workings:*

	Total	*Per unit*
	$	*$*
Sales	*750,000*	*25*
Direct materials	*(300,000)*	*(10)*
Direct labour	*(75,000)*	*(2.5)*
Variable production overheads	*(60,000)*	*(2)*
Fixed production overheads	*(120,000)*	*(4)*
Gross profit	*195,000*	*6.5*

(3c) Shirley Company

Income statement for the year ended 31 December 2018 under absorption costing

	$'000	$'000	
Sales ($25 x 23,000)		575	*(0.5)*
Less: Cost of goods sold			
Direct materials ($10 x 28,000)	280		*(0.5)*
Add: Direct labour ($2.5 x 28,000)	70		*(0.5)*
Add: Variable production overheads ($2 x 28,000)	56		*(0.5)*
Add: Fixed production overheads ($4 x 28,000)	112		*(0.5)*
	518		
Less: Ending inventory ($18.5* x 5,000)	92.5		*(1)*
	425.5		
Add: Under-absorbed fixed production overheads	8	433.5	*(0.5)*
Gross profit		141.5	*(0.5)*
Less: Selling and administrative overheads		90	*(0.5)*
Net operating income		51.5	*(1)*

(6 marks)

**$(10 +2.5 + 2 + 4) = $18.5*

(3d) Shirley Company

Income statement for the year ended 31 December 2018 under marginal costing

	$'000	$'000	
Sales		575	*(0.5)*
Less: Variable cost of goods sold			
Direct materials ($10 x 28,000)	280		*(0.5)*
Add: Direct labour ($2.5 x 28,000)	70		*(0.5)*
Add: Variable production overheads ($2 x 28,000)	56		*(0.5)*
	406		
Less: Ending inventory ($14.5* x 5,000)	72.5	333.5	*(1)*
Contribution margin		241.5	*(1)*
Less: Fixed selling and administrative overheads	90		*(0.5)*
Fixed production overheads	120	210	*(0.5)*
Net operating income		31.5	*(1)*

(6 marks)

**$(10 +2.5 + 2) = $14.5*

(3e) The difference in the ending inventory relates to the difference in the handling of fixed production overheads. Under marginal costing, these overheads have been expensed in full as period costs. Under absorption costing, they are classified as product costs at the rate of $4 per unit ($1.6 per direct labour dollar x $2.5). *(1)* Under absorption costing, fixed production overheads amounting to $20,000 ($4 x 5,000) have been added to the value of ending inventory rather than expensed on the income statement. *(1)* As this amount has been absorbed in ending inventory and carried forward to next accounting period under absorption costing, the net operating income reported is $20,000 higher than the net operating income reported under marginal costing, as shown in (c) and (d). *(1)* *(3 marks)*

(Total: 20 marks)