

CA



THE INSTITUTE OF
CHARTERED ACCOUNTANTS
OF SRI LANKA

SUGGESTED SOLUTIONS

KE2 – Management Accounting Information

March 2017

SECTION 01

Answer 01

1.1

Relevant Learning outcome : 1.1.2 Explain the nature, scope and purpose of cost classifications (direct/indirect, fixed/variable/semi-variable, production/period, controllable/non-controllable, relevant/ non-relevant costs).
Study Text reference: Page No. 84, 86, 89, 92
Correct Answer: D

1.2

Relevant Learning outcome : 1.3.1 Explain the types of remuneration (time based, piece based and incentive schemes) and accounting for cost of labour (including flexible working and labour turnover).
Study Text reference: Page No. 176
Correct Answer: C

1.3

Relevant Learning outcome : 2.1.1	
Calculate mark-up and margin, and arrive at the amount in rupees for given mark-up/margin percentages in scenarios (including VAT, income tax and discounts)	
Study Text reference: Page No. 22	
	Rs.
Retail price = 2070/90%	2,300.00
Discounted price to the retail shop (75%*2,300)	1,725.00
After VAT (1,725/1.15)	1,500.00
Profit margin (20%)	300.00
Cost of the item	1,200.00
Correct answer is A	

1.4

Relevant Learning outcome : 2.3.1 Calculate and interpret mean, standard deviation and coefficient of variation.
Study Text reference: Page No. 33
Correct Answer: B

1.5

Relevant Learning outcome : 2.6.1 Interpret simple and aggregate indices.
Study Text reference: Page No. 42
Correct Answer: A

1.6

Relevant Learning outcome : 4.1.1 Calculate simple and compound interest, effective rate of interest, the yield amount when the rate of interest changes with time, regular investment interest, and amortisation schedule.
Study Text reference: Page No. 413
Correct Answer: B

1.7

Relevant Learning outcome : 5.2.1 Calculate and interpret basic variances on direct material cost, direct labour cost, variable production overheads, fixed production overheads, and sales.
Study Text reference: Page No. 520
Correct Answer: C

1.8

Relevant Learning outcome : 6.1.1 Identify linear and quadratic functions related to revenue, costs and profit in the algebraic, and graphical forms.
Study Text reference: Page No. 554, 555
Correct Answer: C

1.9

Relevant Learning outcome : 7.1.2 Discuss the purposes of budgeting
Study Text reference: Page No. 606, 607, 622
Correct Answer: C

1.10

Relevant Learning outcome : 7.4.1 Discuss the purposes of budgeting
Study Text reference: Page No. 611
Correct Answer: B

(Total 20 marks)

Question 02

2.1

Relevant Learning outcome : 1.2.2

Explain material control systems and calculate EOQ, reorder levels, maximum and minimum levels, valuation of stocks and the issues using FIFO, LIFO and AVCO and calculate profit under each stock valuation method.

Study Text reference: Page No. 136, 143, 156, 159, 161

(a), (c) and (d) are false statements.

The following are false due to the reasons explained below:

- (a) The three critical inventory control levels are reorder level, maximum level and minimum level.
- (c) It is used when resupply is gradual.
- (d) FIFO assumes that the materials are issued out of inventory in the order in which they were delivered into inventory.

2.2

Relevant Learning outcome : 2.3.1

Calculate and interpret mean, standard deviation and coefficient of variation.

Study Text reference: Page No. 33, 36, 40

$$\text{Average (mean)} = (110 + 2 \times 120 + 2 \times 90) = 530$$

$$\text{Variance} = (15^2 + 18^2 \times 2 + 9^2 \times 2) = 1,035$$

$$\text{Standard deviation} = \sqrt{1,035} = 32.17$$

2.3

Relevant Learning outcome : 2.5.1

Demonstrate a basic understanding of sampling (simple random sampling and large samples only), sampling distribution of sample mean and sample proportion, and use of confidence intervals in business including their interpretation.

Study Text reference: Page No. 324, 326

$$(a) \text{ Standard error} = \sigma / \sqrt{n} = 30 / \sqrt{100} = 3 \text{ days}$$

$$(b) 95\% \text{ confidence interval } \mu = 720 \pm (1.96 \times 3)$$

$$= 720 \text{ days} \pm 5.88 \text{ days}$$

$$714 \text{ days to } 726 \text{ days}$$

2.4

Relevant Learning outcome :

3.2.1 Discuss the need for Activity-Based Costing (ABC)

3.2.2 Explain the steps involved in ABC - Page No. 390

Study Text reference: Page No. 324, 326

Based on activity based costing;	Rs.
Set up cost (8,000,000/500*60)	960,000.00
Material ordering (1,000,000/100*20)	200,000.00
Labour related (3,000,000/2,000*500)	<u>750,000.00</u>
Total fixed cost for product DD	1,910,000.00
Output of product DD	40,000
Per unit fixed cost	47.75

2.5

Relevant Learning outcome : 5.1.1

Define standard costing (should compare standards vs. budgets) and types of standards.

Study Text reference: Page No. 481

Budgets

Gives planned total aggregate costs for a function or cost center

Can be prepared for all the functions even when output cannot be measured

Expressed in money terms

Prepared for a specific period of time

Standards are used in preparing budgets

Standards

Shows the unit resource usage for a single task

Limited to situations where repetitive actions are performed and output can be measured

Need not be expressed in money terms

Prepared for a cost unit and can be used for many periods.

2.6

Relevant Learning outcome : 5.2.1

Calculate and interpret basic variances on direct material cost, direct labour cost, variable production overheads, fixed production overheads, and sales.

Study Text reference: Page No. 514

Budgeted sales volume	=	1,500
Actual sales volume	=	1,630
Sales volume variance in units	=	130
Standard profit per unit (Rs.)	=	400 * 30% 120
Sales volume profit variance (Rs.)	=	130*120 15,600 F

Alternative

Budgeted sales volume x Standard profit	(1,500 x 120)	=	180,000
Actual sales volume x Standard profit	(1,630 x 120)	=	<u>195,000</u>
	Variance	=	<u>15,600F</u>

2.7

Relevant Learning outcome : 6.1.1

Identify linear and quadratic functions related to revenue, costs and profit in the algebraic, and graphical forms.

Study Text reference: Page No. 558, 559

Demand curve equation

$$P = a - bx$$

$$\text{Price increase} = 5,500 / 1.10 * 10\% = \text{Rs. } 500$$

$$\text{Initial price} = 5,500 - 500 = \text{Rs. } 5,000$$

$$\text{Demand decrease} = 51,000 / .85 * 15\% = 9,000 \text{ units}$$

$$\text{Initial demand} = 51,000 + 9,000 = 60,000 \text{ units}$$

$$b = \frac{500}{9,000} = 1/18$$

$$5000 = a - (60,000 * 1/18)$$

$$a = 5,000 + 3,333 = 8,333$$

$$P = 8,333 - x/18$$

Alternative

$$b = \frac{\Delta Q_d}{\Delta p} = \frac{9,000}{500} = 18$$

$$Q = a - bp$$

$$60,000 = a - (18 \times 5,000)$$

$$a = 150,000$$

$$Q = 150,000 - 18P$$

2.8

Relevant Learning outcome : 6.1.1

Identify linear and quadratic functions related to revenue, costs and profit in the algebraic and graphical forms.

Study Text reference: Page No. 556

$$X = 120 - 2P$$

$$P = 60 - 0.5X$$

$$TR = P \times X = 60X - 0.5X^2$$

$$TC = FC + VC = 640 + X(4 + 0.5X)$$

$$TC = 640 + 4X + 0.5X^2$$

At the breakeven point, $TR - TC = 0$

$$60X - 0.5X^2 - 4X - 0.5X^2 - 640 = 0$$

$$X^2 - 56X + 640 = 0$$

$$X = 16 \text{ or } X = 40$$

Since minimum sales is 20, $X = 40$

When $X = 40$, $P = \text{Rs. } 40$

2.9

Relevant Learning outcome : 6.2.1

Demonstrate the use of differential calculus in maximisation and minimisation decisions (using profit function or marginal functions with necessary and sufficient conditions). - Study Text reference: Page No. 568

Profit maximizing price & quantity

Profit is maximized when

$$MR = MC$$

$$100 - 0.05X = 60$$

$$x = 40 / 0.05 = \mathbf{800 \text{ units}}$$

$$\text{Price} = 100 - 0.025x$$

$$= 100 - (0.025 \times 800) = \mathbf{\text{Rs. } 80/\text{per unit}}$$

Maximum Profit

$$= \text{Revenue} - \text{Cost} = (800 \times 80) - ((800 \times 60) + 7,500)$$

$$= \mathbf{\underline{\underline{\text{Rs. } 8,500}}}$$

Alternative 01

$$\begin{aligned} \text{TR} &= x(100 - 0.025x) \\ &= 100x - 0.025x^2 \\ \text{TC} &= 60x + 7,500 \\ \text{Profit} &= 100x - 0.025x^2 - (60x + 7,500) \\ &= 40x - 0.025x^2 - 7,500 \end{aligned}$$

$$\begin{aligned} \text{Marginal profit} &= \frac{dy}{dx} 40 - 0.05x \\ 0 &= 40 - 0.05x \\ 0.05x &= 40 \\ x &= 800 \end{aligned}$$

Maximum profit

$$\begin{aligned} \text{Profit} &= 40x - 0.025x^2 - 7,500 \\ &= (40 \times 800) - (0.025 \times 800^2) - 7,500 \\ &= \text{Rs. 8,500} \end{aligned}$$

Alternative 02

$$\begin{aligned} \text{TR} &= 100x - 0.025x^2 \\ \text{TC} &= 60x + 7,500 \\ \text{Profit} &= 40x - 0.025x^2 - 7,500 \end{aligned}$$

At maximum profit

$$\begin{aligned} 40x - 0.025x^2 - 7,500 &= 0 \\ x = 216.9048 \quad \text{or} \quad x = 1,383.0951 \\ \frac{216.9048 + 1,383.0951}{2} &= 800 \text{ units} \end{aligned}$$

Maximum profit

$$\begin{aligned} &40x - 0.025x^2 - 7,500 \\ &(40 \times 800) - (0.025 \times 800^2) - 7,500 \\ &\underline{\text{Rs. 8,500}} \end{aligned}$$

2.10

Relevant Learning outcome : 7.3.1

Prepare functional and cash budgets (only the understanding of master budget is expected) Study Text reference: Page No. 591, 592

Calculation	Quantity
<u>Production requirement</u>	
Expected sales (in cases)	15,200
Closing stock	1,800
(-) Opening stock	<u>(1,200)</u>
Total production cases	15,800
Total production in packets = 15,800 x 24	379,200
<u>Purchasing requirement</u>	<u>Kg</u>
Unpacked tea requirement (379,200/1,000)*500	189,600
Normal loss adjusted material requirement = (189,600/.95)	199,579
Closing stock	30,000
(-) Opening stock	<u>(25,000)</u>
Total purchases in kg	<u>204,579</u>

Alternate

	Kg
Sales in kg $\left(15,200 \times 24 \times \frac{500}{1,000} \right)$	182,400
(-) Opening finished goods $\left(1,200 \times 24 \times \frac{500}{1000} \right)$	(14,400)
(+) Closing finished goods $\left(1,800 \times 24 \times \frac{500}{1000} \right)$	<u>21,600</u>
	189,600
Normal loss $\left(\frac{189,600}{95} \times 5 \right)$	<u>9,979</u>
	199,579
(-) Opening materials	(25,000)
(+) Closing materials	<u>30,000</u>
Total purchases	<u>204,579</u>

SECTION 2

Answer 03

Relevant Learning Outcome/s:
2.4.1 Discuss the importance of probability for a business.

Study Text reference: Page No. 289

Suggested detailed answer

(a)

Number of units sold	Contribution per unit (Rs.)	Fixed costs (Rs.)	Profit (Rs.)	Joint probability	Expected value (Rs.)
100,000	7	400,000	300,000	$(0.4 \times 0.5 \times 0.3) = 0.06$	18,000
100,000	7	500,000	200,000	$(0.4 \times 0.5 \times 0.7) = 0.14$	28,000
100,000	5	400,000	100,000	$(0.4 \times 0.5 \times 0.3) = 0.06$	6,000
100,000	5	500,000	0	$(0.4 \times 0.5 \times 0.7) = 0.14$	0
80,000	7	400,000	160,000	$(0.6 \times 0.5 \times 0.3) = 0.09$	14,400
80,000	7	500,000	60,000	$(0.6 \times 0.5 \times 0.7) = 0.21$	12,600
80,000	5	400,000	0	$(0.6 \times 0.5 \times 0.3) = 0.09$	0
80,000	5	500,000	(100,000)	$(0.6 \times 0.5 \times 0.7) = 0.21$	(21,000)
				1.00	58,000

- (b) (i) The probability of a profit is 56% $((0.06 + 0.14 + 0.06 + 0.09 + 0.21) \times 100\%)$
- (ii) The probability of a loss is 21% $(0.21 \times 100\%)$
- (iii) The probability of breakeven is 23% $((0.14 + 0.09) \times 100\%)$

(Total 10 marks)

Answer 04

Relevant Learning Outcome/s:

- 3.1.1 Explain the steps involved in absorption costing and marginal costing, and their relevance in the modern business environment.
- 3.1.2 Prepare an overhead analysis sheet (with reciprocal servicing only a discussion is expected) and its allocation to end products or services (including under-or-over-absorption).
- 3.1.3 Prepare profit statements under both absorption and marginal costing, and the profit reconciliation statement.

Study Text reference: Page No. 341, 364, 376

Suggested detailed answer

(a)

	Absorption Costing (Rs.)	Marginal Costing (Rs.)
<u>Item cost</u>		
Direct material and labour	3,800	3,800
Direct overheads	1,200	1,200
Fixed production overhead W1	250	-
Item cost	5,250	5,000
Value of closing inventory 100 units W2	<u>525,000</u>	<u>500,000</u>

Working 1(W1)

Fixed production overhead absorption rate

Rs.

Budgeted fixed production overhead 300,000

Rate per unit = Budgeted fixed cost/ Budgeted units
= 300,000/1,200

250 per table

Working 2 (W2)

Closing inventory units = 125+1275 – 1300 = 100 units

(b) Overhead Over/Under absorption

		Rs.	
Budgeted fixed production overhead	(250 * 1,275)	318,750	
Actual fixed production overhead		(299,000)	
Total overhead over absorption		<u>19,750</u>	Over

(c.) Statement of Profit or Loss

		Absorption Costing (Rs.)	Marginal Costing (Rs.)
Revenue	= 7500*1300	9,750,000	9,750,000
<u>Cost of sales</u>			
Opening inventory		(643,000)	(606,000)
Production cost	= 1275*5250 Absorption = 1275*5000 Marginal	(6,693,750)	(6,375,000)
(-) Closing inventory		<u>525,000</u>	<u>500,000</u>
Contribution/ profit before overhead over absorption		2,938,250	3,269,000
(+) overhead over absorption		<u>19,750</u>	<u>-</u>
Contribution/ Profit after overhead over absorption		2,958,000	3,269,000
(-) R&D cost		(74,000)	(74,000)
(-) Fixed production overhead		-	(299,000)
(-) Selling & distribution cost		<u>(950,000)</u>	<u>(950,000)</u>
Net Profit/ Loss		<u>1,934,000</u>	<u>1,946,000</u>

Profit difference = 1,934,000 – 1,946,000 = Rs. (12,000)

- (d) Reason for the difference is the fixed production costs included in closing inventory in the absorption costing method.

(Total: 10 marks)

Answer 05

Relevant Learning Outcome/s:
4.2.3 Calculate Payback, ARR, NPV and IRR under simple cash flow projects.
Study Text reference: Page No. 445, 456, 460

Suggested detail answer

(a)

(i) NPV Computation

	Rs. '000					
Year	0	1	2	3	4	5
Investment	(80,000)					40,000
Revenue	-	20,000	22,000	24,200	26,620	29,282
Direct costs	-	(3,000)	(3,000)	(5,000)	(5,000)	(5,000)
Other expenses	-	(900)	(900)	(900)	(900)	(900)
Total cash flows	(80,000)	16,100	18,100	18,300	20,720	63,382
Discount at 15%	1	0.8696	0.7561	0.6575	0.5718	0.4972
PV	(80,000)	14,000	13,686	12,033	11,847	31,512
NPV of the project	3,078					

(ii) Payback period

Year	Cumulative cash inflows (Rs.)
0	(80,000)
1	(63,900)
2	(45,800)
3	(27,500)
4	(6,780)

$$= 4 \text{ years} + \frac{6,780}{63,382} * 12 \text{ months}$$

$$= \underline{\underline{4 \text{ years and 1.3 months or 4 years and 2 months or 4 years and 39 days}}}$$

(iii) Accounting Rate of Return

	Rs. million
Total Profit (16,100+18,100+18,300+20,720+63,382)	136.602
(-) Depreciation	(40)
(-) Fixed cost	<u>(2.5)</u>
Total profit after depreciation & fixed costs	94.102
Average annual profit =94.102/5	18.8204
Average investment (80+40)/2	60
ARR = (18.8204/60)*100	<u>31.36%</u>

(b)

- (i) IRR is the interest rate at which the NPV is zero for an investment but no indication is given about the total expected NPV in the currency form for the project.
- (ii) IRR method indicates that a project is viable if the IRR exceeds the expected interest rate, hence it does not focus on value maximisation.
- (iii) IRR may not support the best option where multiple investment options are available. The IRR method selects the investment with highest IRR instead selecting the investment with highest NPV.
- (iv) IRR provides only a relative measure in the form of a percentage but not an absolute measure as NPV.
- (v) NPV of a project changes if the discount rate changes however, IRR gives the same result even if the discount rate changes for the same period.
- (vi) In the case of positive cash flows followed by negative ones and then by positive ones, the IRR may have multiple values (Non-conventional cash flows).
- (vii) NPV method is easily understandable to readers whereas the IRR is understandable only to the readers who knows what IRR means.

(Total: 10 marks)

Answer 06

Relevant Learning Outcome/s

7.2 Forecasting for budgeting

Study Text reference: Page No. 643, 649, 650, 652, 659

Suggested detail answer

(a)	Quarter	Quarter No.	Trend	Seasonal index	Sales (Quantity)	Sales (Rs. million)	
	Jan-Mar	1	24,000	110	26,400	26.4	
	Apr - Jun	2	28,000	90	25,200	25.2	
	Jul - Sep	3	32,000	80	25,600	25.6	
	Oct - Dec	4	36,000	120	43,200	47.52	
(b)	Y = a + bX						
						<div>1</div> <div>2</div>	
	$\sum Y = na + b\sum X$		146,400 = 6a + 306b ----->				
	$\sum XY = a\sum X + b\sum X^2$		7,578,400 = 306a + 15,886b ----->				
	Y = 4,000 + 400X						
	Alternatively;						
	$b = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$	$= (6 \times 7,578,400 - 306 \times 146,400) / (6 \times 15,886 - 306^2) = 400$					
	$a = \frac{(\sum y)(\sum x^2) - (\sum x)(\sum xy)}{n(\sum x^2) - (\sum x)^2}$	$= (146,400 / 6) - (400 \times 306 / 6) = 4,000$					
	Production overheads budget	Sales (Quantity)	Overheads (Rs. million)				
	Jan-Mar	26,400	14.56				
	Apr - Jun	25,200	14.08				
	Jul - Sep	25,600	14.24				
	Oct - Dec	43,200	21.28				
(c)	Correlation coefficient is used to measure the strength of the relationship between the two variables. The coefficient getting closer to +1 means that there is a strong positive relationship between the variables and if the coefficient is closer to -1 then the relationship becomes strongly negative.						

SECTION 3

Answer 07

Relevant Learning Outcome/s :

1.4.1 Explain characteristics of job, batch, contract, process and service costing.

1.4.2 Demonstrate job, batch, contract (contract account preparation and recognising profit), process (losses, gains, scrap value, disposal cost, closing WIP and opening WIP based on AVCO method) and service costing under appropriate business situations.

Study Text reference: Page No. 268

Suggested detail answer

(a)	(i)	Opening WIP	6,000	units
		Introduced during the month	41,000	units
		Closing WIP	(8,000)	units
		Production for the month	39,000	units
		Normal loss 10%	3,900	units
		Abnormal loss (4,200 - 3,900)	300	units

(ii) Statement of equivalent units – Using weighted average cost method (AVCO)

	No. of units	Materials	Labour	Overheads	
<u>Units</u>					
Completed units	34,800	34,800	34,800	34,800	
Abnormal loss	300	300	300	300	
Closing WIP	8,000	8,000	4,000	4,000	
Equivalent units	43,100	43,100	39,100	39,100	
		Rs. '000			
Opening WIP		14,190	4,860	3,880	
From Process 1		53,300	-	-	
Incurred during the month		21,050	22,510	19,580	
Sale of scraps (W1)		(2,340)	-	-	
Total cost		86,200	27,370	23,460	
Cost per unit (Rs.)		2,000	700	600	3,300
				Rs. '000	
W1 =	Scrap value for normal loss = (2,520,000/4,200)*3,900 =			2,340	

(iii)

- Completed production = $(2,000+700+600)*34,800 = \text{Rs. } 114,840,000$
- Closing WIP $(8,000*2,000+4,000*700+4,000*600) = \text{Rs. } 21,200,000$
- Accounting loss in abnormal loss account =
 $= 300*(2,000+700+600) - (2,520,000/4,200)*300 = \text{Rs. } 810,000$

(iv)

- Process costing runs through a series of processes whereas job costing is not so.
- Output of process costing is similar (homogeneous) whereas for each job the job costing is unique.
- Labour involvement in job costing is high whereas process costing is used for automated processes.

(b)

	Rs.
Fuel $(24,000/6*100)$	400,000
Depreciation $((8,000-500)/4/12)$	156,250
Repair and maintenance	300,000
Salaries $(40,000+20,000)$	60,000
Incentives	15,000
General expenses	<u>100,000</u>
Total cost per month	<u>1,031,250</u>
Chargeable distance $(24,000 * 90\%)$	21,600 km
Cost per kilometre	Rs. 47.74
Price per km (at 50% profit mark-up)	Rs. 71.61

(Total 20 marks)



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