

CA



THE INSTITUTE OF
CHARTERED ACCOUNTANTS
OF SRI LANKA

SUGGESTED SOLUTIONS

KE2 – Management Accounting Information

September 2016

SECTION 1

Answer 01

1.1

Relevant Learning Outcome: 1.1.1

Define the terms cost, cost unit, composite cost units, cost centre and elements of cost.

Correct answer: B

1.2

Relevant Learning Outcome: 1.3.1

Explain types of remuneration (time based, piece based and incentive schemes) and accounting for cost of labour (including flexible working and labour turnover).

	Rs.
First week – guaranteed wage	12,000
Based on piecework (20 pieces)	10,000
Therefore labour cost per necklace (Week 1)	600
Second week – guaranteed wage	12,000
Based on piecework (30 pieces)	15,000
Therefore labour cost per necklace (Week 2)	500

Correct answer: C

1.3

Relevant Learning Outcome: 1.4.1

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

Correct answer: B

1.4

Relevant Learning Outcome: 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.

	Rs.
Main material cost	4,000,000
Additional materials	<u>500,000</u>
	4,500,000
Material per unit	450
Conversion cost	25
Cost per semi-finished product	475
Value of 1,000 WIP	475,000

Correct answer: D

1.5

Relevant Learning Outcome: 2.2.1			
Calculate variations under addition, subtraction, multiplication and division. Estimate the maximum error in profit when price, quantity, variable cost per unit and fixed costs are subject to error.			
Direct material	Rs. 40 + 5%	=	42
Direct labour	Rs. 30 + 6%	=	31.8
Direct overhead	Rs. 10 + 4%	=	<u>10.4</u>
Maximum expected cost per unit		=	84.2
Expected cost per unit (40 + 30 + 10)		=	<u>80</u>
Maximum absolute error per unit		=	4.2
Correct answer: B			

1.6

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)		
	VAT (11%)	VAT (15%)
Selling price	11,500	11,100
Cost of sales	<u>(9,200)</u>	<u>(9,200)</u>
Gross profit	2,300	1,900
New profit mark-up		0.2065217 20.65%
Correct answer: B		

1.7

Relevant Learning Outcome: 4.2.3
Calculate Payback, ARR, NPV and IRR under simple cash flow projects.
Correct answer: C

1.8

Relevant Learning Outcome: 4.2.2
Explain non-discounting factor and discounting factor methods in project appraisal.
Correct answer: A

1.9

Relevant Learning Outcome: 5.2.2

Prepare a basic operating statement (variance reconciliation statement of budgeted and actual profit under absorption, and marginal costing)

Correct answer: C

1.10

Relevant Learning Outcome: 7.3.1

Prepare functional and cash budgets (only understanding of matter budget is expected)

	Rs. '000
Annual purchases	14,400
Cash purchases (30%)	4,320
Credit purchases (70%)	10,080
December credit purchases	840
Payment for 11 months	9,240
Settlement of opening balance	600
Total payment to suppliers	14,160

Correct answer: D

(Total: 20 marks)

Answer 02

2.1

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).

- i. Those which are future costs involved with the decision
Example: Capital cost of new machines
- ii. Incremental in nature due to the decision
Example: Wages of additional workers
- iii. Decision results in cash flow
Example: Capital cost of new machines, cost of materials
- iv. Opportunity cost
Example: Current selling price of the land

2.2

Relevant Learning Outcome: 1.1.3

Calculate fixed and variable elements from total cost using “high-low” and “linear regression” methods

Highest activity level = 155,000 units with a total cost of Rs. 1,600,000

Lowest activity level = 80,000 units with a total cost of Rs. 925,000

Variable cost per unit =

Total cost at highest activity level – total cost at lowest activity level

Total units at highest activity level – total units at lowest activity level

$$= \frac{1,600,000 - 925,000}{155,000 - 80,000} = \text{Rs. 9 per unit}$$

Total variable cost = 9 * 150,000 = Rs. 1,350,000

Total fixed cost = 925,000 – 80,000 * 9 = Rs. 205,000

2.3

Relevant Learning Outcome: 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.			
Material cost	A: 3 x 175	525	
	B: 2 x 380	760	1,285
Labour cost	16 x 60		960
Other direct expenses			655
Total direct cost			<u>2,900</u>
Overhead cost (2,900 x 15%)			<u>435</u>
Total estimated cost			<u><u>3,335</u></u>
Total price offered	= 3,335 x 1.30	Rs.	4,335.50

2.4

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)	
	Rs.
Cost	3,000
With mark-up of 50%	4,500
With VAT at 15%	5,175
Discounted price	4,140
<u>If 100 rackets sold</u>	Rs.
Sale with VAT	414,000
VAT amount	<u>(54,000)</u>
Net sales	360,000
Less: Cost of goods sold	
Cost of rackets (for 100)	(300,000)
5% free issue (5 free racquets)	
Cost of free issue (5 * 3,000)	(15,000)
	<u>(315,000)</u>
	<u>45,000</u>
Actual profit margin	12.50%

2.5

Relevant Learning Outcome: 2.4.2

Calculate simple and conditional probabilities using multiplicative and additive rules, expectation and variance of discrete probability distribution (special discrete probability distribution such as 'Binomial and Poisson distributions' are not expected), and probability estimates using normal distribution.

(i) = Probability of achieving group target x probability of achieving individual target

$$= 0.85 \times 0.7$$

$$= 0.595 \text{ or } 59.5\%$$

(ii) = Probability of achieving individual target x probability of not achieving group target

$$= 0.7 \times (1 - 0.85)$$

$$= 0.105 \text{ or } 10.5\%$$

2.6

Relevant Learning Outcome: 2.5.1

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

$$\text{The standard error of the mean} = 10 / \sqrt{400} = 0.5 \text{ years}$$

$$\text{Z-score at 95\% confidence level} = 1.96$$

$$\text{Average age} = 32 \pm (1.96 \times 0.5)$$

$$= 31.02 - 32.98$$

2.7

Relevant Learning outcome: 4.2.1

Calculate present value of lump sum, annuity and perpetuity payments.

(i) Instalment = $1,000,000 / \text{CDF} (20\text{Q}, 3\% \text{ p.q.})$
= $1,000,000 / 14.878$
= Rs. 67,213

Alternatively,

$$\text{FV} = \text{PV} (1+r^n) = 1,000,000 (1 + 0.03)^{20} = 1,806,111.24$$

$$1,806,111.24 = A[(1+0.03)^{20} - 1]/0.03 \rightarrow A = 67,213$$

(ii) At the beginning of the third year, 12 instalments are outstanding
PV of 12 instalments = $67,213 \times 9.954$
= 669,038

2.8

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.

CDF (12Q, r% p.q.) = $669,038 / 71,290$
= 9.385
Using the table, r = 4% per quarter
New rate p.a. = 16%

Alternatively,

If the IRR method was applied, marks were given accordingly.

2.9

Relevant Learning Outcome: 4.2.3

Calculate Payback, ARR, NPV and IRR under simple cash flow projects.

	Rs.
(i) Accounting profit	350 million
Average profit	70 million
Average investment $(550 + 50)/2$	300 million
ARR	23%

- (ii) – It does not consider the time value money.
– Accounting profit is based on various accounting adjustments such as depreciation etc.

2.10

Relevant Learning Outcome: 4.2.3.

Calculate Payback, ARR, NPV and IRR under simple cash flow projects.

Time series is a series of values observed and/or recorded over time

The four components of time series are:

- Trend
- Seasonal variations
- Cyclical variations
- Random variations / non-recurring variations

(Total: 30 marks)

SECTION 2

Answer 03

Relevant Learning Outcome/s: 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.

- (a) Average sales of bicycles during the last six months 450
Annual demand for tyres (450 x 2 x 12) 10,800

$$\begin{aligned} \text{EOQ} &= \sqrt{2 C_o D / C_H} \\ &= \sqrt{2 * 500 * 10,800 / 200 * 15\%} \\ &= 600 \end{aligned}$$

$$\text{Total ordering cost} = (10,800 / 600) * 500 = 9,000$$

At EOQ, ordering cost = carrying cost

Therefore total cost = 9,000 x 2 = Rs. 18,000

- (b) Re-order level
= Maximum demand x maximum lead time
= (550 x 2/4) x 6
= 1,650 tyres

$$\begin{aligned} \text{Maximum stock level} &= \text{ROL} - (\text{minimum demand} \times \text{minimum lead time}) + \text{ROQ} \\ &= 1,650 - (350 \times 2/4 \times 2) + 600 \\ &= 1,900 \text{ tyres} \end{aligned}$$

$$\begin{aligned} \text{Minimum stock level} &= \text{ROL} - (\text{average demand} \times \text{average lead time}) \\ &= 1,650 - 450 \times 2/4 \times 4 \\ &= 750 \text{ tyres} \end{aligned}$$

- (c) Reorder level – this is the level that an order should be placed to replenish inventories. When the order is placed at the right time, it helps to avoid having stock out situations as well as excess stocks.

Maximum level – this is a warning level to signal management that inventories are reaching potentially wasteful level.

Minimum level – this is the warning level to draw management attention to the fact that inventories are approaching a dangerously low level and stock outs are possible. If the stock level goes below this level, that is an indication that the consumption and lead time have exceeded the original levels assumed in setting the ROL.

Answer 04

Relevant Learning Outcome/s: 2.3.1 and 2.4.1

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

2.4.1 Discuss at the importance of probability for a business.

(a) Chemical BS

Contribution per unit = $(400 - 200) =$ Rs. 200

Demand	Total contribution (x) (Rs. million)	Probability of demand level (p)	
100,000	20.00	40%	8.00
120,000	24.00	30%	7.20
150,000	30.00	20%	6.00
160,000	32.00	10%	3.20
Expected contbⁿ (\bar{x})			24.40

Expected contribution = Rs. 24.40 million

Since the expected contribution is higher with Chemical CB, it should be recommended.

(b)

Demand	Total contribution (x) (Rs. million)	$(x - \bar{x})$	$(x - \bar{x})^2$	$p(x - \bar{x})^2$
100,000	20.00	(4.40)	19.36	7.744
120,000	24.00	(0.40)	0.16	0.048
150,000	30.00	5.60	31.36	6.272
160,000	32.00	7.60	57.76	5.776
			108.64	19.840

Standard deviation = $\sqrt{\sum p(x - \bar{x})^2} = \sqrt{19.840} =$ Rs. 4.45 million

In order to compare the project we need to compute the coefficient of variation.

Computation of coefficient of variation = (Std. deviation/expected value)

Chemical BS = $4.45/24.4 = 0.18$ or 18%

Chemical CB = $7/26 = 0.27$ or 27%

The chemical with lower dispersion is Chemical BS. Therefore CPL should favour Chemical BS.

Answer 05

Relevant Learning Outcome/s: 6.1.1 and 6.2.1

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

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).

(a)	Market 1	$X_1 = \frac{80 - 70}{0.01}$	=	1,000
	Market 2	$X_2 = \frac{250 - 70}{0.2}$	=	900
	Revenue from M1	1,000 x 70	=	70,000
	Revenue from M2	900 x 70	=	<u>63,000</u>
		1,900 x 70	=	133,000
	Variable cost	1,900 x 60	=	(114,000)
	Fixed cost		=	<u>(10,000)</u>
	Profit		=	<u><u>9,000</u></u>

(b) Market 1 $TR = 80X_1 - 0.01X_1^2$
 $MR = 80 - 0.02X_1$
 When $MR = MC$; $80 - 0.02X_1 = 60$
 $X_1 = 1,000$
 $P_1 = 70$

Market 2 $TR = 250X_2 - 0.2X_2^2$
 $MR = 250 - 0.4X_2$
 When $MR = MC$; $250 - 0.4X_2 = 60$
 $X_2 = 475$
 $P_2 = 155$

(c)	Revenue from M1	1,000 x 70	=	70,000
	Revenue from M2	475 x 155	=	<u>73,625</u>
				143,625
	Variable cost	1,475 x 60	=	(88,500)
	Fixed cost		=	<u>(10,000)</u>
	Profit		=	45,125
				=====

In Market 1 the company has **set the price correctly** to maximise profit.
 But in Market 2 it has **not been done accurately**.

By adjusting the price to Rs. 155 in Market 2 but selling only 475 units, the profit can be maximised.

Accordingly, the profit can be increased to Rs. 45,125 from the previous Rs. 9,000.

Answer 06

Relevant Learning Outcome/s: 7.1.1, 7.1.2 and 7.4.1

7.1.1 Discuss the purposes of budgeting

7.1.2 Discuss different approaches possible in budgetary planning (including top-down, bottom-up traditional, rolling and zero based budgeting)

7.4.1 Prepare budgetary control statement (fixed/actual/variance)

(a) Expenditure budget statements of LPL

Total budgeted cost	Daily (800)	Monthly (800 daily)	Daily (1,200)	Monthly (1,200 daily)
Monthly production (daily production * 24)		19,200		28,800
Direct material at Rs. 80 per unit	64,000	1,536,000	96,000	2,304,000
Direct labour – Working 01	4,000	96,000	7,000	168,000
Lunch and tea – Working 02	400	9,600	525	12,600
Machinery maintenance – Working 03	1,200	28,800	1,800	43,200
Semi-variable administrative cost – Working 04	7,442	178,600	10,642	255,400
Fixed costs – security	750	18,000	750	18,000
Fixed costs – rent	1,667	40,000	1,667	40,000
Total cost per day (Rs.)	79,459		118,384	
No. of days	24		24	
Total budgeted cost (Rs.)	1,907,000	1,907,000	2,841,200	2,841,200

Working 01

Direct labour

	Units per day 800	Units per day 1,200
No. of hours worked	= 800/ 100 8 hours	= 1,200/100 12 hours
Cost for 5 workers at Rs. 800	4,000	4,000
Payment for additional hours (5 * 4 hours * 150)	-	3,000
Total labour cost per day	4,000	7,000
Monthly labour cost (24 days)	96,000	168,000

Working 02

Lunch and tea

Normal cost per day at Rs. 80 for 5	400	400
Additional cost for more than 10 hours	-	125
Total cost per day	400	525
Monthly lunch and tea cost (24 days)	9,600	12,600

Working 03

Machinery maintenance

Per day at Rs. 150 per hour	1,200	1,800
Monthly machinery maintenance cost (24 days)	28,800	43,200

Working 04

Admin cost: High-low method

$$\begin{aligned}\text{Variable cost} &= \frac{236,200 - 169,000}{26,400 - 18,000} \\ &= \text{Rs. 8 per unit}\end{aligned}$$

$$\begin{aligned}\text{Fixed cost} &= 236,200 - (26,400 * 8) = 25,000 \\ \text{Total admin cost (19,200 units)} &= 19,200 * 8 + 25,000 = 178,600 \\ \text{(28,800 units)} &= 28,800 * 8 + 25,000 = 255,400\end{aligned}$$

- (b) In the top-down approach the budget holders do not participate in the budgeting process whereas in the bottom-up approach budget holders get the opportunity to participate in budget setting process.

	Advantages	Disadvantages
Top-down	<ul style="list-style-type: none">- Uses senior managers' awareness about resource availability.- Decreases the input from inexperienced employees.- Reduces the time taken in the process.- Provides better coordination between plans and objectives of the divisions.- Incorporates strategic plans	<ul style="list-style-type: none">- Dissatisfaction or reduced morale amongst employees.- No or less input from the managers who are carrying out the day-to-day operations.- Could lead to unachievable budgets being set- Budgets could be seen as a punitive device.- The feeling of team spirit may disappear.

Bottom-up	<ul style="list-style-type: none"> - Employees' morale/motivation is improved. - Supports more realistic budgets. - Prepared with the co-ordination of different units. - Operational managers' commitments taken into consideration. - Inputs are based on employees who are familiar with the specific item. 	<ul style="list-style-type: none"> - Time consuming approach. An earlier start to the process may be required as a result. - Managers could set easy budgets. - Unrealistic budgets could be set if the managers are not qualified enough.
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NOT FOR SALE

SECTION 3

Answer 07

Relevant Learning Outcome/s : 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2 and 5.2.1	
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) under absorption costing.
3.1.3	Prepare profit statements under both absorption and marginal costing, and the profit reconciliation statement.
3.2.1	Discuss the need for Activity-Based Costing (ABC)
3.2.2	Explain the steps involved in ABC
5.2.1	Calculate and interpret basic variances on direct material cost, direct labour cost, variable production overheads, fixed production overheads, and sales.

(a)	Total fixed cost	Rs. 11,700,000
	<u>Labour hours</u>	
	Product X (45/300) * 50,000	7,500
	Product Y (60/300) * 30,000	6,000
	Product Z (30/300) * 60,000	<u>6,000</u>
	Total hours	19,500
	Rate per hour (11,700,000/19,500)	600
		Rs.
	Product X (45/300) * 600	= 90.00
	Product Y (60/300) * 600	= 120.00
	Product Z (30/300) * 600	= 60.00
(b)	<u>Sales</u>	Rs. '000
	Product X	
	Product Y	
	Product Z	55,000
	<u>Cost of sales</u>	
	Materials	22,400
	Labour	6,000
	Variable cost	5,600
	Fixed overheads (20,200hrs * 600)	<u>12,120</u>
	Gross profit	<u>(46,120)</u> 8,880
	Fixed overheads under-absorbed (12,120 – 13,000)	<u>(880)</u>
	Actual profit for the month	<u>8,000</u>

(c)

- The production overheads are a high proportion of the total production cost.
- There are three types of diverse products.
- The amount of overheads used for each product is different.
- It is apparent that there are more cost drivers than volume-related cost drivers, such as direct labour hours.

(d)

Direct material price variance = (Std price – Act price) * Act purchased

$$= (22,500 * 200) - 4,410,000 = 90,000 \text{ (favourable)}$$

Direct material usage variance = (Std usage – Act usage) * Std price

$$= [(40,000 * 0.5) - 22,500] * 200 = 500,000 \text{ (adverse)}$$

Labour rate variance = (Std rate – Act rate) * Act hours

$$= (300 - 310) * 5,900 = 59,000 \text{ (adverse)}$$

Labour efficiency variance = (Std usage – Act usage) * Std rate

$$= [(40,000 * 45/300) - 5,900] * 300 = 30,000 \text{ (favourable)}$$

- (e) (i) The rate/price of the material purchased is under the control and responsibility of the purchasing manager. The usage of the material purchased therefore will be done during production, under the supervision of the production manager. In other words, the production manager cannot be held responsible for the variances (both favourable and adverse) that occur due to the variance in the purchase price. On the other hand the purchasing manager cannot be held responsible for variances in material utilisation. Therefore, in order to identify the adverse or favourable variance, the material cost variance should be divided into rate and usage components.

Alternatively;

- (i) A favourable material cost variance could consist of an adverse material price variance which has been offset by a favourable usage variance. In such circumstances, it is important to identify whether the adverse material price variance has been caused by an increase in prices, careless purchasing without negotiating for a reasonable price or due to changes in the standard. In the case of an adverse material usage variance, it is important to identify whether the adverse variance was caused by low quality material, wastage of materials, defective materials, theft or incorrect issue of materials for production. Analysing the material cost variance into price and usage variance is important.

Even when the material price and usage variances are favourable the management would like to know how much of the favourable material cost variance is due to a material price variance and whether it is due to unforeseen discounts or changes in the standard.

The management would also like to know the amount of the favourable material usage variance separately as well and whether it is due to use of better quality materials than the standard, efficient usage of material etc.

- (ii) Cost of skilled labour is comparatively high so the labour rate variance will increase. Since the skilled labour is much more experienced, labour efficiency variance will show improved results (favourable variance). Since material handling and usage is improved with skilled labour than unskilled, the material usage variance can increase.

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