

KE 2 - MANAGEMENT ACCOUNTING INFORMATION
Suggested Answers and Marking Grid

SECTION 1

Question 01

1(a)

1.1.

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).

Correct answer: C

Effective discount of option A is $50\%/2 = 25\%$; of B is $100\%/3 = 33\%$ and of C is $200\%/5 = 40\%$. D is straight forward and is 35%. Accordingly offer C is the best as it gives the highest effective discount.

1.2.

Learning Outcome:

4.2.2 Explain non-discounting factor and discounting factor methods in project appraisal.

Correct answer: A

IRR, Payback and ARR methods are not functions of the discount rate. Only NPV is a function of the discount rate.

1.3.

Learning Outcome:

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

Correct answer: D

The maximum amount one would be prepared to invest is equal to the PV of the future payments, which is; $100,000 \times 5.6502 \times 0.3220 = \text{Rs. } 181,936$ (Rs. 182,000)

1.4.

Learning Outcome:

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

Correct answer: A

EV can never be equal or more than the highest absolute value. Only possible answer therefore is A.

1.5.

Learning Outcome:

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

Correct answer: A

Bigger the coefficient of variation ($COV = SD/Mean$) wider the spread; COV of each of the data sets are (A) 0.167; (B) 0.114; (C) 0.125; (D) 0.120 and the biggest is that of A.

1.6.

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.

Correct answer: B

In EOQ model there is no requirement for the lead time to be zero; But all other assumptions are required.

1.7.

Learning Outcome:

3.1.1 Explain the steps involved in absorption costing and marginal costing, and their relevance in the modern business environment.

Correct answer: B

Closing inventory under AC is always higher due to absorption of FOH thus option A and D are not correct. Since inventory has increased, FOH c/f through inventory is greater than what is getting charged from b/f inventory thus AC profit will be higher; hence option B is correct.

1.8.

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.

Correct answer: D

In option D there is no reduction in consumption of RM per unit compared to the standard. But in options A, B and C there could be such a reduction.

1.9.

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.

Correct answer: C

Std Error is $SD(100) / \text{SqRt of sample size}(10) = 10$; $Z@95\%$ is approx 2; Hence UCL is $600 + 2 \times 10 = 620$

1.10.

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 proportions, and use of confidence intervals in business including their interpretation.

Correct answer: A

Standard error of proportion = $\text{SqRt of } (0.2 \times 0.8 / 100) = 0.04 = 4\%$;

Interval @ 95% Confidence = $20\% \pm 2 \times 4\% = 12\%$ to 28%

Marking Guide
Each question carries 2 marks. Total 20 marks.

1(b)

1.11

Learning Outcome
7.2.1 Explain regression and time series as possible techniques in forecasting principle budgetary factor.

9 years

Workings ('000)

$$\begin{aligned} 1800 &= 100 + 125 + 150 + \dots \dots \dots n \text{ years} \\ &= n/2 \{2 \times 100 + (n-1) \times 25\} \end{aligned}$$

$$25n^2 + 175n - 3600 = 0;$$

$$n^2 + 7n - 144 = 0;$$

$$(n + 16)(n - 9) = 0$$

$$n = 9$$

1.12

Learning Outcome:

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

15 years

Workings ('000)

$7,200 = 100 + 120 + 144 + \dots \rightarrow n$ out of 25 years

$$7,200 = 100 \times (1.2^n - 1) / (1.2 - 1)$$

$$15.4 = 1.2^n$$

$$n = \log(15.4) / \log(1.2) = 15$$

1.13

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.

14.87%

Workings ('000)

If the AER is 'r' and initial investment is P

$$P \times (1 + r)^5 = 2P$$

$$r = (2)^{1/5} - 1 = 0.1487 = 14.87\%$$

1.14

Learning Outcome:

2.6.1 Interpret simple and aggregate indices.

142

Workings

$$129 \times 110 / 100 = 141.9 = 142$$

1.15

Learning Outcome:
3.1.3 Prepare profit statements under both absorption and marginal costing, and the profit reconciliation statement.

Rs. 7,888,000

Workings ('000)

VC per unit	=	$\frac{3394 - 3086}{1210 - 990}$	=	1.40
FC per month	=	$3394 - 1210 \times 1.40$	=	1700
OAR per unit	=	$1700/1000$	=	1.70
Difference in profit	=	$(1200 - 1040) \times 1.70$	=	272
Absorption costing profit	=	$8,160 - 272$	=	7888

1.16

Learning Outcome:
3.1.3 Prepare profit statements under both absorption and marginal costing, and the profit reconciliation statement.

Rs.12,000,000

Workings ('000)

Total contribution required	=	$5,500 + 1,000$	=	6,500
Contribution by P and Q	=	$10,000 \times 15\% + 20,000 \times 10\%$	=	3,500
Contribution required from R			=	3,000
Revenue required from R	=	$3,000/0.25$	=	12,000

1.17

Learning Outcome:
1.1.3 Calculate fixed and variable elements from total cost using "high-low" and "linear regression" methods.

1,236 units (increase)

Workings

When Q=7, TV =	$4000 + 80 \times 7 =$	4560
Seasonal sales =	$4560 \times 95\% =$	4332
When Q=8, TV =	$4000 + 80 \times 8 =$	4640
Seasonal sales =	$4640 \times 120\% =$	5568
Increase =	$5568 - 4332 =$	1236

1.18

Learning Outcome:

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

2.28%

At 20minutes, $Z = (20-10)/5 = 2$

On normal distribution based on $Z = 2$; $P = 0.5000 - 0.4772 = 0.0228$

1.19

Learning Outcome:

3.2.2 Explain the steps involved in ABC.

Identification of major activities

Identification of cost drivers

Collection of the costs of activities in to cost pools

Charging the cost of activities to products based on the usage of the activity

1.20

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 proportions, and use of confidence intervals in business including their interpretation.

175,000 units or 175%

Workings

BE sales volume without any error = $3,000,000 / (80 - 50) = 100,000$

Maximum possible BE sales volume = $3,000,000 \times 110\% / (80 \times 90\% - 50 \times 120\%) = 275,000$

Minimum possible BE sales volume = $3,000,000 \times 90\% / (80 \times 110\% - 50 \times 80\%) = 56,250$

Maximum error = $275,000 - 100,000 = 175,000$ units or $175,000/100,000 = 175\%$

(On the negative side error is less than 175,000 i.e. $100,000 - 56,250 = 43,750$)

Marking Guide

Each question carries 3 marks.

Total 30 marks.

SECTION 2

Question 02

1.

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

Marginal cost per unit	
Material (1200/20)	60
Piecework rate	15
Distributor Commission	15
	90
If the number of units is q,	
Total cost function would be	$90q + 150,000$

Marking Guide	Marks
Marginal Cost per Unit	1
Total Cost Function	1
	Total 2 marks

2.

Learning Outcome:	
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).	

Gradient of the demand curve	0.003	To increase demand by 1 unit selling price must be reduced by 3/1000 i.e. by Rs 0.003
Intercept of the demand curve	150	If quantity to be made zero, price has to be increased by $0.003 \times 20,000 = 60$. That is to $60 + 90$

		= 150; Therefore intercept of the demand curve is Rs 150
Demand Function	$p = 150 - 0.003q$	
Total Revenue function	$TR = 150q - 0.003q^2$	
Marginal Revenue	$MR = 150 - 0.006q$ By differentiating TR	

Marking Guide	Marks
Gradient of the demand curve	1
Intercept of the demand curve	1
Demand function	1
Total revenue function	1
Marginal revenue	1
	Total 5 marks

3.

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

Optimum output is where $MC = MR$

Therefore;

Optimum output	$90 = 150 - 0.006q$	$q = 10,000$
Selling price at optimum output level	$SP = 150 - 0.003q$ $= 150 - 0.003(10,000)$	Rs. 120
Total profit	$= (120 - 90) \times 10,000 - 150,000 =$	Rs. 150,000

Marking Guide	Marks
Optimum output	1
Selling price at optimum output level	1
Total profit	1
	Total 3 marks

Question 03

1.

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

Reconciliation of input and output units

Input	Units
Opening WIP	600
Input from Process - 1	5,000
	5,600

Output	Units
Normal loss	500
Abnormal loss	300
Finished goods	3,800
Closing WIP	1,000
	5,600

Marking Guide	Marks
Overall statement	1
Abnormal loss	0.5
Completed during the month	0.5
	Total 2 marks

2.

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

Equivalent Units										
	Physical units		Material from process 1		Added material		Labour		Overheads	Value (Rs.)
Normal Loss	500		-		-					
Abnormal Loss	300	100%	300	100%	300	100%	300	100%	300	
Finished Goods	3,800	100%	3,800	100%	3,800	100%	3,800	100%	3,800	
Closing WIP	1,000	100%	1,000	75%	750	40%	400	20%	200	
Equivalent Units			5,100		4,850		4,500		4,300	(1)
Cost - Opening WIP - LKR			75,000		25,000		50,000		14,400	
- Incurred during the period - LKR			970,000		217,500		400,000		308,100	
			1,045,000		242,500		450,000		322,500	
Less: Scrap Sales			(25,000)		-		-		-	
Net Cost			1,020,000		242,500		450,000		322,500	(2)
Cost per Unit (LKR) = (1) / (2)			200		50		100		75	425

Marking Guide	Marks
Total Cost	1
Normal loss	0.5
Op.WIP Equi. Units	1.5
Cl.WIP Equi. units	1
Cost per unit	2
	Total 6 marks

3.

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

Value of finished goods (Rs.)											1,615,000
(Cost of production transferred to Finished Goods)											(3,800 x 425)
Value of Closing Work-in-Progress (Rs.)			200,000		37,500		40,000		15,000		292,500
			(1,000 x 200)		(750 x 50)		(400 x 100)		(200 x 75)		

Marking Guide	Marks
Cost of production transferred to Process - 3	1
Closing WIP	1
	Total 2 marks

Question 04

4.1

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.

1.

$$\begin{aligned}\text{Reorder Level} &= \text{Max consumption} \times \text{Max lead time} \\ &= 9,000 \times 6 \\ &= \underline{54,000}\end{aligned}$$

2.

$$\begin{aligned}\text{Maximum Level} &= \text{Reorder level} + \text{Reorder quantity} - (\text{Minimum usage} \times \\ &\quad \text{Minimum lead time}) \\ &= 54,000 + 36,000 - (3,000 \times 4) \\ &= \underline{78000}\end{aligned}$$

3.

$$\begin{aligned}\text{Minimum Level} &= \text{ROL} - \text{Avg consumption} \times \text{Avg lead} \\ &\quad \text{time} \\ &= 54,000 - 6000 \times 5 \\ &= \underline{24,000}\end{aligned}$$

4.

$$\begin{aligned}\text{Average Level} &= (\text{Maximum Limit} + \text{Minimum Limit})/2 \\ &= (78,000 + 24,000)/2 \\ &= \underline{51,000}\end{aligned}$$

Marking Guide	Marks
Reorder Level	1
Maximum Level	1
Minimum Level	1
Average Level	1
	Total 4 marks

4.2

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.

1.

$$EOQ = (2DC_o/C_c)^{1/2} = (2 \times 8,000 \times 100 / 25 \times 10\%)^{1/2} = 800 \text{ units}$$

2.

$$\text{Total ordering cost} = (8,000/800) \times 100 = \text{Rs } 1,000$$

$$\text{Total holding cost} = (800/2) \times 25 \times 10\% = \text{Rs } 1,000$$

3.

- Demand may not be constant and difficulty in prediction
- Sufficient resources may not be available to accommodate EOQ
- Purchase price and interest rates may fluctuate

Marking Guide	Marks
EOQ	2
Total ordering cost	1
Total holding cost	1
1 mark each for any two practical issues	2
	Total 6 marks

Question 05

1.

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.			
<u>Direct material:</u>			Rs. '000
Actual cost of 1,000 kg purchased @ Rs 300 per kg	=		300
Add:Material price variance (F)	=		30
Actual quantity @ standard price	=		330
Standard price of material	=	Rs. 330,000/1,000kg	= Rs. 330 per kg
Usage variance (in units)	=	Rs. 33,000/330 per kg	= 100 kg adverse
Standard quantity per unit	=	(1,000-100)kg/9,000 units	= 0.1 kg per unit
Standard cost of direct material per unit of ALPHA	=	0.1kg @ 330	= Rs.33

<u>Direct labour:</u>			Rs. '000
Actual cost 5,000 hours @ LKR 78 per hour	=		390
Add: Labour rate variance (F)	=		10
Actual labour hours @ standard rate	=		400
Standard rate of labour	=	Rs. 400,000/5,000hours	= Rs.80 per hour
Efficiency variance (in hours)	=	Rs. 32,000/Rs.80per hour	= 400 hours favourable
Standard labour hours per unit	=	(5,000+400)/9,000 units	= 0.6 hours per unit
Standard cost of direct labour per unit of ALPHA	=	0.6 hours @ 80	= Rs.48

<u>Variable production overhead:</u>			Rs. '000
Variable overhead incurred(5,000 hours)	=		122
Less: V.P.O.H expenditure variance (A)	=		22
Budgeted variable overhead	=		100
Budgeted rate	=	Rs. 100,000/5,000hours	= Rs.20 per hour

Marking Guide	Marks
Actual quantity @ standard price	0.5
Standard price of material	0.5
Usage variance (in units)	0.5
Standard quantity per unit	0.5
Standard cost of direct material per unit of ALPHA	0.5
Actual labour hours @ standard rate	0.5
Standard rate of labour	0.5
Efficiency variance (in hours)	0.5

Standard labour hours per unit	0.5
Standard cost of direct labour per unit of ALPHA	0.5
Budgeted variable overhead	0.5
Budgeted rate	0.5
Standard cost of VPOH per unit of ALPHA	0.5
	Total 6.5 marks

2.

Learning Outcome:
5.1.1 Define standard costing (should compare standards vs. budgets) and types of standards.

The three categories of standards are basic standards, attainable standards and ideal standards.

Attainable standards are preferred

Basic standards are standards which are kept unaltered over a long period of time, and may be out-of- date.

Ideal standards assume perfect operating conditions such as no wastage, no inefficiencies, no idle time, no breakdowns which are obviously impracticable to achieve and creates an unfavourable motivational impact on employees.

Attainable standards are current and can be attained if the work is carried out at a reasonable level of efficiency. Therefore this has a desirable motivational impact on employees

Marking Guide	Marks
Stating the three categories	0.5
Discussion of the categories	3
	Total 3.5 marks

SECTION 3

Question 06

1.

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.

APSL - Fixed budget for March 2015

	Rs	Rs
Revenue (90 x 0.5% x 2,000,000)		900,000
Variable Costs		
Professional manpower (6x400x90)	216,000	
Document filing (1,000 x 90)	90,000	
Credit worthiness assessment (1,200 x 90)	108,000	
Courier and mailing (500 x 90)	45,000	
Total variable costs		(459,000)
Contribution margin		441,000
Fixed costs - Office maintenance		(310,000)
Operating profit		131,000

Marking Guide	Marks
Revenue	0.5
Professional manpower	0.5
Document filing	0.5
Credit worthiness assessment	0.5
Courier and mailing	0.5
Total variable costs	0.5
Fixed costs - Office maintenance	0.5
Operating profit	0.5
	Total 4 marks

2.

Learning Outcome:
7.4.1 Prepare budgetary control statement (fixed/flexed/actual/variance).

APSL - March 2015

Budgetary Control Statement

	Actual	Flex budget variance	Flexible Budget	Sales Volume Var	Fixed Budget
Number of Loans	120	-	120	30	90
	Rs	Rs	Rs	Rs	Rs
Revenue	1,344,000	144,000	1,200,000	300,000	900,000
Variable Costs					
Professional manpower	362,880	74,880	288,000	72,000	216,000
Document filing	120,000	-	120,000	30,000	90,000
Credit worthiness assessment	150,000	6,000	144,000	36,000	108,000
Courier and mailing	64,800	4,800	60,000	15,000	45,000
Total variable costs	697,680	85,680	612,000	153,000	459,000
Contribution margin	646,320	58,320	588,000	147,000	441,000
Fixed costs - Office maintenance	335,000	25,000	310,000	-	310,000
Operating profit	311,320	33,320	278,000	147,000	131,000

Total sales volume variance (Rs)			147,000 Favourable
Total flexible budget variance (Rs)		33,320 Favourable	
Total fixed budget variance (Rs)	180,320 Favourable		

Marking Guide	Marks
Actual	4
Flex Budget Variance	1.5
Flexible Budget	4
Sales Volume Variance	1.5
Total Sales Volume Variance	0.5
Total Flexible Budget Variance	0.5
	Total 12 marks

3.

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		

Actual input quantity @ actual price (120 x 7.2 x 420)	362,880	
Actual input quantity @ budgeted price (120 x 7.2 x 400)	345,600	
Professional manpower price variance	17,280	Adverse
Actual input quantity @ budgeted price (120 x 7.2 x 400)	345,600	
Budgeted input quantity allowed for actual output @ budgeted price (120 x 6 x 400)	288,000	
	57,600	Adverse

Marking Guide	Marks
Actual input quantity @ actual price	0.5
Actual input quantity @ budgeted price	0.5
Professional manpower price variance	1
Actual input quantity @ budgeted price	0.5
Budgeted input quantity allowed for actual output @ budgeted price	0.5
Total Flexible Budget Variance	1
	Total 4 marks