# SUGGESTED SOLUTIONS

**KE2 – Management Accounting Information**

**March 2019**

# SECTION 1

**Answer 01**

1.1

| **Learning outcome/s: 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: Pages 98 and 99 |
| **Correct answer: B** |

1.2

| **Learning outcome/s: 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). |
| Study text reference: Page 175 |
| **Correct answer: B** |

1.3

| **Learning outcome/s: 1.4.1** |
| --- |
| Explain characteristics of job, batch, contract, process and service costing. |
| Study text reference: Pages 218 – 221 |
| **Correct answer: C** |

1.4

| **Learning outcome/s: 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. |
| Study text reference: Page 364 |
| **Correct answer: C** |

1.5

| **Learning outcome/s: 3.2.2** |
| --- |
| Explain the steps involved in ABC. |
| Study text reference: Page 389 |
| **Correct answer: A** |

1.6

| **Learning outcome/s: 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 407 |
| **Correct answer: B** |

1.7

| **Learning outcome/s: 5.1.1** |
| Define standard costing (should compare standards vs. budgets) and types of standards. |
| Study text reference: Page 476 |
| **Correct answer: D** |

1.8

| **Learning outcome/s: 6.1.1** |
| Identify linear and quadratic functions related to revenue, costs and profit in the algebraic, and graphical forms. |
| Study text reference: Page 552 |
| **Correct answer: C** |

1.9

| **Learning outcome/s: 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 565 |
| **Correct answer: C** |

1.10

| **Learning outcome/s: 7.1.2** |
| Discuss different approaches possible in budgetary planning (including top-down, bottom-up traditional, rolling and zero-based budgeting). |
| Study text reference: Pages 606, 607, 622 and 626 |
| **Correct answer: B** |

**(2 x 10 = Total: 20 marks)**

**Question 02**

2.1

| Cost in January without step-up cost (Rs.) | = 524,000 – 32,000 | = 492,000 |
| Change in hours | = 8,300 – 6,500 | = 1,800 |
| Change in costs (Rs.) | = 492,000 – 420,000 | = 72,000 |
| Variable cost per hour (Rs.) | = 72,000/1,800 | = 40 |
| Fixed cost per hour (Rs.) | = 492,000 – (8,300 * 40) | = 160,000 |
| Total cost for March (Rs.) | = 8,700 * 40 + 160,000 + 32,000 | **= 540,000** |

2.2

| Daily rate | Rs. 2,100 |
| --- | --- |
| Effective hours (8 – 1) | 7 hours |
| Labour rate per hour (2,100/7) | Rs. 300 |
| Labour charges (Job A) = 2 * 300 | Rs. 600 |
| Labour charges (Job B) = 3 * 300 | Rs. 900 |

2.3

<u>Output and losses</u>
Expected output = (2,500) * 90% = 2,250 units
Abnormal loss = 2,250 – 2,100 = 150 units
<u>Cost per unit</u>
Scrap value of normal loss = 2,500 * 10% * 10 = Rs. 2,500

= (90,000 – 2,500 + 58,750)/2,250 = Rs. 65

<u>Amount transferred to the statement of profit or loss</u>
Output value = 65 * 150          =          9,750
Less: Scrap sale = 150 * 10       =        (1,500)
Total loss transferred to P&L     =     Rs . 8,250

2.4

| | |
|---|---|
| **Learning outcome/s: 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. | |
| Study text reference: Pages 310, 315 – 318 | |

| (i) | More than Rs. 2,200 | |
|---|---|---|
| | z-value $= (2,200 - 1,800)/380$ $= 1.053$ | |
| | Proportion from the table $= 0.3531$ | |
| | Proportion higher than 2,200 is $= 0.5 - 0.3531$ **$= 0.1469$ or 14.69%** | |
| (ii) | Spend between Rs. 1,200 and Rs. 2,000 | |
| | z-value $1,200 = (1,200 - 1,800)/380$ $= 1.58$ | |
| | Proportion from the table $= 0.4429$ | |
| | z-value $2,000 = (2,000 - 1,800)/380$ $= 0.53$ | |
| | Proportion from the table $= 0.2019$ | |
| | Total proportion $= 0.4429 + 0.2019$ **$= 0.6448$ or 64.48%** | |

2.5

| | |
|---|---|
| **Learning outcome/s: 2.6.1** | |
| Interpret simple and aggregate indices. | |
| Study text reference: Pages 48 and 49 | |

$$\text{Weighted average of price relative index} = \frac{\sum W \times P_1 / P_0}{\sum W} \times 100$$

$= (29.55/25) * 100$

$= 118.20$

| Ingredient | Relative price ($p_1/p_0$) | Weight (W) | Index |
|---|---|---|---|
| Flour | $126/90 = 1.40$ | 12 | $1.40 * 12 = 16.80$ |
| Eggs | $387/430 = 0.90$ | 6 | $0.90 * 6 = 5.40$ |
| Butter | $735/700 = 1.05$ | 7 | $1.05 * 7 = 7.35$ |
| | | $\sum W = 25$ | $\sum W*p_1/p_0 = 29.55$ |

2.6

| Overhead absorption rate per unit (Rs.) | 450 |
|---|---|
| Closing stock (28,000 – 24,000) | 4,000 units |
| Overheads in closing stock (Rs.) | 1,800,000 |
| Profit per absorption costing (Rs.) | 7,200,000 |
| Profit per marginal costing (Rs.) | **5,400,000** |

2.7

Computation of the total number of production runs

| Product A = 18,000/500 | 36 |
|---|---|
| Product B = 25,000/2,500 | 10 |
| Product C = 20,000/2,000 | 10 |
| Total no. of production runs | 56 |
| Machine set-up costs (Rs.) | 5,600,000 |
| Set-up cost per production run (Rs.) | 100,000 |
| Set-up cost per unit of Product B (100,000 * 10)/25,000 | **Rs. 40** |

2.8

| Assume the original number of members to be "Q" and the membership fee to be "P" |
|---|
| PQ = 570,000 |
| P (Q-4) + 8,000 (Q-4) = 570,000          OR |
| (Q-4)(P+8,000) = 570,000          OR |
| $\frac{(570,000 + 8,000)}{Q}$ (Q – 4) = 570,000          OR |
| $\frac{570,000}{(Q-4)}$ – P  = 8,000  —————— (1) |
| $\frac{570,000}{4}$ – P  = 0  —————— (2) |

2.9

| |
| --- |
| Marginal cost = Rs. 60 |
| |
| Market A selling price = Rs. 180 |
| Market A contribution = Rs. 180 – Rs. 60 = Rs. 120 |
| Total contribution of Market A = Rs. 120 * 8,000 = Rs. 960,000 |
| |
| Market B |
| TR = $250Q - 0.005Q^2$ |
| MR = $250 - 0.01Q$ |
| Profit is maximised when MR = MC (i.e. $250 - 0.01Q = 60$) |
| Q = 19,000 |
| P = 155 |
| Only 10,000 could be produced. At that level the price is, |
| P = 250 – 0.005 * 10,000 = 200 |
| Therefore the contribution from Market B would be → (200 – 60) * 10,000 = Rs. 1,400,000 |
| **Therefore Market B should be targeted at the price of Rs. 200 each** |

2.10

| | Amount/Quantity |
| --- | --- |
| Production requirement | |
| To meet sales demand | 800 |
| Closing inventory | 200 |
| | 1,000 |
| Less: Opening inventory | (100) |
| Budgeted production volume | **900 bags** |
| Usage requirement (in meters) | |
| To fulfil the budgeted production (900 * 0.5 meters) | 450 |
| To provide for inventory loss (450/0.9) * 10% | 50 |
| For closing inventory (135 * 0.5)/0.9 | 75 |
| | **575 meters** |
| Total cost of purchases (575 * 450) | **Rs. 258,750** |

**(Total: 30 marks)**

# SECTION 2

## Answer 03

(a)

| EOQ = √(2 * demand * ordering cost)/holding cost | |
|---|---|
| EOQ = √(2 * 120,000 * 20,000)/(400 * 15% + 400 * 2%) | |
| EOQ = 8,402 valves | |
| | |
| **Per the present ordering system** | **Rs.** |
| Ordering cost = 120,000/5,000 * 20,000 = | 480,000.00 |
| Holding cost = (5,000/2) * 68 | 170,000.00 |
| Total cost of ordering and holding | 650,000.00 |
| | |
| **At EOQ level** | **Rs.** |
| Ordering cost = 120,000/8,402 * 20,000 = | 285,646.27 |
| Holding cost = (8,402/2) * 68 | 285,668.00 |
| Total cost of ordering and holding | 571,314.27 |

**Cost saving = Rs. 78,686**
Therefore at EOQ level the cost of inventory is Rs. 78,686 less than the present ordering system.

(b)

Re-order level = Maximum usage * Maximum lead time
Re-order level = 800 valves per day * 45 days
Re-order level = 36,000 valves

(c)

| Description | Price (Rs.) | Quantity (units) | Balance (units) | Balance value (Rs.) | AVCO value per unit (Rs.) |
|---|---|---|---|---|---|
| Opening | 50 | 40,000 | 40,000 | **2,000,000** | 50.00 |
| Issues | | 20,000 | 20,000 | **1,000,000** | 50.00 |
| Receipts | 52.10 | 50,000 | 70,000 | 3,605,000 | 51.50 |
| Issues | | 20,000 | 50,000 | 2,575,000 | 51.50 |
| Receipts | 60.25 | 20,000 | 70,000 | 3,780,000 | 54.00 |
| Issues | | 25,000 | 45,000 | **2,430,000** | 54.00 |

The value of closing inventory is 45,000 units for Rs. 2,430,000.

**(Total: 10 marks)**

**Answer 04**

(a)    Consider a loan of Rs. 10,000 at 27.85%

Monthly instalment = (10,000 * (1 + 27.85%))/12 = Rs. 1,065.42

Annuity of Rs. 1,065.42 for 12 periods where PV is 10,000
Annuity factor = 10,000/1,065.42 = 9.3860
From the tables, the monthly rate is approximately 4%
AER = 1.04^12 – 1 = 60%

(b)    If the effective monthly rate is r, then:

(1 + r)^12 = 142.5%

r = 3.00%

12 period annuity factor at 3% = 9.954

The new instalment for a loan of Rs. 10,000 = 10,000/9.954 = 1,004.62

10,000 * (1 + R)/12 = 1,004.62
                R = 20.55%

**(Total: 10 marks)**

**Answer 05**

(a)

|                 | **Original** | **Flexed** |
| --------------- | ------------ | ---------- |
| Output (units)  | 10,000       | 12,000     |
|                 |              | **Rs.**    |
| Material A      |              | 5,280,000  |
| Material B      |              | 1,200,000  |
| Labour          |              | 1,200,000  |
| Fixed overheads |              | 2,000,000  |
| Total           |              | 9,680,000  |

(b)

(i)    Material price variance = (Standard price – Actual price) * Actual quantity purchased/utilised

       Material A = 5 * (4.5 * 12,000) = Rs. 270,000 Favourable
       Material B = -5 * (2 * 12,000) = - Rs. 120,000 Adverse

(ii)   Material usage variance = (Standard usage – Actual usage) * Standard rate

       Material A = (4 * 12,000 – 4.5 * 12,000) * 110 = - Rs. 660,000 Adverse
       Material B = (2 * 12,000 – 2 * 12,000) * 50 = Nil

(iii)  Labour rate variance = (Standard rate – Actual rate) * Actual hours
                            = -10 * (0.6 * 12,000) = - Rs. 72,000 Adverse

(iv)   Labour efficiency variance = (Standard hours – Actual hours) * Standard rate
                                  = (0.5 * 12,000 – 0.6 * 12,000) * 200 = - Rs. 240,000 Adverse

(v)    Fixed overhead expenditure variance = Budgeted expenditure – Actual expenditure
                                           = (2,000,000 – 2,300,000) = - Rs. 300,000 Adverse

(c)    - Increase in wastage due to careless handling.
       - Use of substandard materials, which will increase the wastage.
       - Change in the method of production.
       - Defects in machinery.
       - Errors in standards, and out-of-date standards.

**(Total: 10 marks)**

**Answer 06**

| | |
|---|---|
| **Learning outcome/s: 7.2** | |
| Forecasting for budgeting | |
| Study text reference: Pages 643, 650 and 655 | |

(a)

<table>
<tr>
<td>(i)</td>
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**Sales function (using the high-low method)**

Highest no. of events – lowest no. of events  = 980 – 480 = 500
Highest sales in bunches – lowest sales in bunches  = 26,000 – 14,000 = 12,000

Variable number of bunches per event = 12,000/500 = **24 bunches**

Fixed demand = 26,000 – (980 * 24) **= 2,480 bunches**

Sales function: No. of bunches (Y), no. of events (e)

Y = 2,480 + 24e

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<td>(ii)</td>
<td>

**Cost function (using the least squares method)**

$$b = \frac{n\sum XY - \sum X \sum Y}{n\sum X^2 - (\sum X)^2}$$

$$= \frac{(5 * 197,600) - (81 * 10,750)}{(5 * 1,521) - (81 * 81)}$$

= 117,250/1,044

= 112.31

$$a = \frac{\sum Y}{n} - b\frac{\sum X}{n}$$

$$= \frac{10,750}{5} - 112.31 * \frac{81}{5}$$

= 2,150 – 1,819.42

= 330.578

Y = 330.58 + 112.31X

</td>
</tr>
</table>

(b)

| | | Amount (Rs.) |
|---|---|---|
| | Profit when the no. of events to be served is 900<br>Sales quantity = 2,480 + 900 * 24 = 24,080 bunches<br>Revenue      = 24,080 * 600 | 14,448,000 |
| | Cost<br>= 330.58 + 112.31(24,080)<br>= 330.58 + 2,704,425 | (2,704,755) |
| | **Total profit** | 11,743,245 |

**(Total: 10 marks)**

# SECTION 3

**Answer 07**

**Learning outcome/s: 2.1.1 and 2.2.1**
2.1.1  Calculate mark-up and margin, and arrive at the amount in rupees for the given mark-up/margin percentages in scenarios (including VAT, income tax and discounts).
2.2.1  Calculate variations under addition, subtraction, multiplication and division. Estimate maximum error in profit when price, quantity, variable cost per unit and fixed costs are subject to error.

Study text reference: Pages 18, 19 and 28

(a)

| W1 | Passenger | Cargo |
|---|---|---|
| Salaries and other administrative costs (Rs.)<br>= 4,800,000 * 3/8 = 1,800,000 | 720,000 | 1,080,000 |
| Fuel, utility and depreciation (Rs.)<br>= 4,800,000 * 4/8 = 2,400,000 | 600,000 | 1,800,000 |
| Airport fees and other charges (Rs.) = 600,000 | 180,000 | 420,000 |
| **Total cost (Rs.)** | **1,500,000** | **3,300,000** |

| (i) | Cost to carry 1kg of cargo<br>= Total cargo carrying cost / total cargo weight<br>= 3,300,000/2,500kg<br>**= Rs. 1,320** |
|---|---|
| (ii) | Mark-up ratio per passenger ticket<br>Cost per passenger in the passenger section = 1,500,000/100 = Rs. 15,000<br>Add: Cost of the cargo section = 1,320 * 10              = Rs. 13,200<br>Total cost                                                                  = Rs. 28,200<br><br>Total selling price excluding VAT = (43,700/1.15)       = Rs. 38,000<br>Mark-up amount = Rs. 38,000 – Rs. 28,200                = Rs.   9,800<br>**Mark-up ratio = 9,800/28,200                            = 34.75%** |

(b)    Gross profit margin per trip when there is 100% passenger occupancy in the peak season

| | (Rs.) |
|---|---|
| Ticket revenue = 38,000 * 100 | 3,800,000 |
| Normal cargo revenue = Cargo selling price * cargo space<br>                                   = {2,500 – (100 * 10)} * 90% * {1,320/(100% – 25%)}<br>                                   = 1,760 * 1,350kg | 2,376,000 |
| Postal space sales  = Cargo selling price * Cargo space<br>income<br>                          = {2,500 – (100 * 10)} * 10% * {1,320 * (100% + 25%)}<br>                          = 1,650 * 150kg | 247,500 |
| Sale of passenger extra space = Cargo selling price * Extra space<br>                                          = 1,760 * (100% + 20%) * {1,000 * (1 – 0.794)}<br>                                          = 2,112 * 206kg | 435,072 |
| Total revenue | 6,858,572 |
| Total operating cost | (4,800,000) |
| Expected gross profit | 2,058,572 |
| Gross profit margin per trip = 2,058,572/6,858,572 | **30.01%** |

(c)

| | Rs. |
|---|---|
| Net decrease in ticket sales = 3,800,000 – {100 * 38,000 * (100% – 15%)} | (570,000) |
| Increase in extra cargo sales = {(100 * 10) * 0.7940 – 300} * (1,760 * 120%)<br>                               = 494kg * 2,112 | 1,043,328 |
| Total increase in gross profit | **473,328** |
| Change in profit per air trip (%) = 473,328/2,058,572 | **22.99%** |

**Alternative answer**                                                                   Rs.
Revenue from air tickets (32,300 * 100)                          = 3,230,000
Postal cargo (150kg * 1,650)                                          =   247,500
Commercial cargo (1,760 * 1,350)kg                              = 2,376,000
Sale of passenger extra space (2,112 x 700kg)               = 1,478,400
Total revenue in off-peak season                                   = 7,331,900
Total operating cost                                                      =(4,800,000)
Gross profit                                                                  = 2,531,900

Increase in gross profit (2,531,900 – 2,058,572)             =    473,328

Chang in profit per air trip (473,328/2,058,572 * 100)      =    22.99%

(d)

| (i) | Revenue = No. of tickets * price per ticket |
| --- | --- |
|  | Rs.<br><br>Maximum revenue = (300 + 50) * (52,000 + 500) =    18,375,000<br>Minimum revenue = (300 – 50) * (52,000 – 500) =    12,875,000<br><br>Expected revenue per day = 300 * 52,000 =    15,600,000<br>Maximum absolute error = 15,600,000 – 18,375,000 =    **2,775,000** |
| (ii) | Maximum cost of sales = (3,980,000 + 2%) + (2,750,000 + 6%) + (1,875,000 + 5%)<br><br>= 8,943,350<br><br>Minimum cost of sales = (3,980,000 – 2%) + (2,750,000 – 6%) + (1,875,000 – 5%)<br><br>= 8,266,650<br><br>Expected cost of sales = (3,980,000 + 2,750,000 + 1, 875,000) = 8,605,000<br><br>Maximum absolute error = 8,943,350 – 8,605,000 = Rs. 338,350 |

(e)     Maximum absolute profit for a week of 7 days

|  | Rs. |
| --- | --- |
| Maximum absolute revenue | 18,375,000 |
| Minimum absolute cost | (8,266,650) |
| Maximum absolute profit per day | 10,108,350 |
| Maximum absolute profit for 7 days = 10,108,350 * 7 | **70,758,450** |

**(Total: 20 marks)**

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