



**Association of Accounting Technicians of Sri Lanka**

**Level I Examination – January 2026**

**Suggested Answers**

**(102) BUSINESS MATHEMATICS AND STATISTICS (BMS)**

**Association of Accounting Technicians of Sri Lanka**

No.540, Ven. Muruththettuve Ananda Nahimi Mawatha,

Narahenpita, Colombo 05.

Tel : 011-2-559 669

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THE ASSOCIATION OF ACCOUNTING TECHNICIANS OF SRI LANKA  
**Level I Examination – January 2026**  
**(102) BUSINESS MATHEMATICS AND STATISTICS**  
**SUGGESTED ANSWERS**

(Total 40 Marks)

**SECTION - A**

*Suggested Answers to Question One:*

1.1 (3)

$$\begin{aligned}6x + 8 &= 3x + 29 \\6x - 3x &= 29 - 8 \\3x &= 21 \\x &= 7 //\end{aligned}$$

(03 marks)

1.2 (3)

$$\begin{aligned}\text{EAR} &= (1 + r/N)^N - 1 \\ \text{EAR} &= (1 + 0.16/4)^4 - 1 = 16.99\% //\end{aligned}$$

(03 marks)

1.3 (2)

$$Pr(\text{pass, pass}) = \frac{3}{5} \times \frac{1}{3} = \frac{1}{5} //$$

(03 marks)

1.4 (2)

$$P = \frac{p_1}{p_0} \times 100$$

$$Q = \frac{300}{130} \times 100 = 231\% //$$

(03 marks)

1.5 (1)

(03 marks)

1.6 (2)

$$\begin{aligned}L_1 &= 39.5, \quad \Delta_1 = 61 - 52 = 9 \quad C = 10 \\ \Delta_2 &= 61 - 38 = 23\end{aligned}$$

$$M_o = L_i + \left[ \frac{\Delta_1}{\Delta_1 + \Delta_2} \right] \times C$$

$$M_o = 39.5 + \left[ \frac{9}{9+23} \right] \times 10$$

$$M_o = 42.31 //$$

(03 marks)

1.7 (4)

P <sub>0</sub>	q <sub>0</sub>	P <sub>1</sub>	P <sub>0</sub> q <sub>0</sub>	P <sub>1</sub> q <sub>0</sub>
225	8	175	1800	1400
400	15	125	6000	1875
550	20	250	11000	5000
			18 800	8275

$$\begin{aligned} \text{Laspeyre's Price Index} &= \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100 \\ &= \frac{8275}{18800} \times 100 \\ &= 44.02 \% // \end{aligned}$$

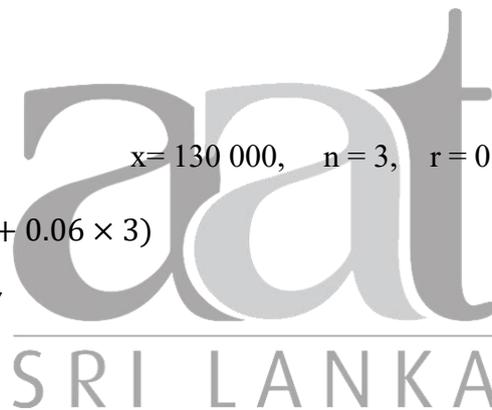
(03 marks)

1.8 (3)

$$S = X(1 + rn) \quad x = 130\,000, \quad n = 3, \quad r = 0.06$$

$$S = 130\,000 \times (1 + 0.06 \times 3)$$

$$S = 153\,400.00 //$$



(03 marks)

1.9 (2)

$$\hat{Y} = \hat{T} \times \hat{S}$$

$$\hat{Y} = 9420 \times 0.95$$

$$\hat{Y} = 8949 //$$

(03 marks)

1.10 (2)

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

$$\begin{aligned} r &= \frac{5 \times 838 - 63 \times 71}{\sqrt{(5 \times 881 - 63^2) (5 \times 1049 - 71^2)}} \\ &= -0.9489 // \end{aligned}$$

(03 marks)

1.11

A	→	3
B	→	4
C	→	2
D	→	1

(01 mark each, 04 marks)

1.12

1000, 1150, 1300, ...

$$T_n = a + (n - 1)d$$

$$T_{12} = 1000 + 11 \times 150$$

$$T_{12} = \text{Rs. } 2650$$

**membership fee in the 12th month is Rs. 2650 //**

(02 marks)

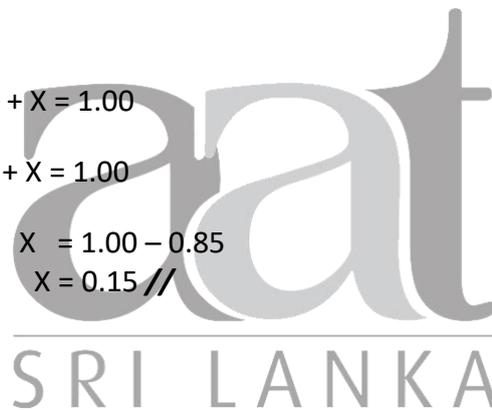
1.13

$$0.1 + 0.2 + 0.25 + 0.30 + X = 1.00$$

$$0.85 + X = 1.00$$

$$X = 1.00 - 0.85$$

$$X = 0.15 //$$



(02 marks)

1.14 True

(01 mark)

1.15 False

(01 mark)

(Total 40 marks)

**End of Section A**

**Suggested Answers to Question Two:****Chapter 1.3 / 1.4 / 1.6**

(a)

Cups of flour for 10 people = 2.5

Cups of flour for 01 people =  $2.5 / 10 = 0.25$ **Cups of flour for 15 people =  $0.25 \times 15 = 3.75 / 3 \frac{3}{4}$** 

Cups of Milk for 10 people = 1

Cups of Milk for 01 people =  $1 / 10 = 0.1$ **Cups of Milk for 15 people =  $0.1 \times 15 = 1.5 / 1 \frac{1}{2}$** **(02 marks)**

(b)

price of a boy's costume – Rs. X

price of a Girl's costume – Rs. Y

$$2x - 3y = 1,000 \quad \text{---} \textcircled{1}$$

$$5x + 4y = 14,000 \quad \text{---} \textcircled{2}$$

$$X = 2,000$$

$$Y = 1,000$$

**( You can get the answer directly using the calculator, without solving equations)**

price of a boy's costume is Rs. 2,000

price of a Girl's costume is Rs. 1,000 //

**(04 marks)**

(c)

(i)

$$2x - y = 6 \quad \text{---} \textcircled{1}$$

$$X \quad 0 \quad 3$$

$$Y \quad -6 \quad 0$$

$$(0, -6), (3, 0)$$

$$x + 3y = 12 \quad \text{---} \textcircled{2}$$

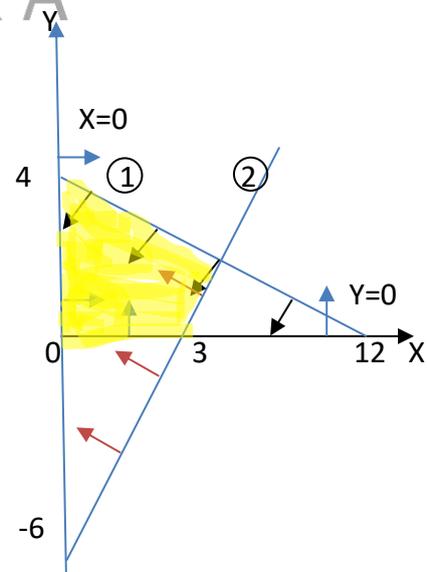
$$X \quad 0 \quad 12$$

$$Y \quad 4 \quad 0$$

$$(0, 4), (12, 0)$$

$$X = 0 \quad \text{---} \textcircled{3}$$

$$Y = 0 \quad \text{---} \textcircled{4}$$

**(03 marks)**

(ii)

The relevant area is shaded in the graph.

(01 marks)  
(Total 10 marks)

### ***Suggested Answers to Question Three:***

<b>Chapter 3.2 /3.3 / 3.6.1 / 3.9</b>
---------------------------------------

(a)

(i)

$$TP = TR - TC$$

$$TP = 1400q - 6q^2 - (1500 + 80q)$$

$$TP = -6q^2 + 1320q - 1500 //$$

(03 marks)

(ii)  $TR = 1400q - 6q^2$

$$MR = \frac{dTR}{dq}$$

$$MR = 1400 - 12q$$

$$TC = 1500 + 80q$$

$$MC = \frac{dTC}{dq}$$

$$MC = 80$$

When profit is maximized

$$MR = MC$$

$$1400 - 12q = 80$$

$$12q = 1320$$

$$q = 110$$

The number of units that maximize profit is 110 //

(04 marks)

(b) At the Break Even Point

$$TR = TC$$

$$66X + 2X^2 = 2X^2 - 6X + 3600$$

$$72X = 3600$$

$$X = 50$$

Break-Even Quantity = 50 units //

(03 marks)  
(Total 10 marks)

### Suggested Answers to Question Four:

#### Chapter 5.7.2

(a)

$$\sum X = 70 \quad \sum Y = 98, \quad \sum XY = 1259, \quad \sum X^2 = 878, \quad n = 7$$

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

$$b = \frac{7 \times 1259 - 70 \times 98}{(7 \times 878 - 70^2)}$$

$$b = \frac{1953}{1246}$$

$$b = 1.57$$

$$a = \bar{Y} - b\bar{X}$$

$$a = \frac{98}{7} + 1.57 \times \frac{70}{7}$$

$$a = 14 - 15.7$$

$$a = -1.7$$

least square regression line  $Y = -1.7 + 1.57x //$

(07 marks)

(b) Substitute,  $x = 12$

$$Y = -1.7 + 1.57x$$

$$Y = -1.7 + 1.57 \times 12$$

$$Y = 17.14$$

The expected sales quantity is 17,140 units //

(03 marks)

(Total 10 marks)

### Suggested Answers to Question Five:

#### Chapter 04.6 / 04.7

(a)

Interval	Mid Point ( $x$ )	$f$	Cumulative Frequency ( $C_f$ )
0 - 9	4.5	3	3
10 - 19	14.5	7	10
20 - 29	24.5	12	22
30 - 39	34.5	10	32
40 - 49	44.5	6	38
50 - 59	54.5	2	40
		$\sum f$ 40	

**Median (Md)**

$$\frac{n}{2} = 20, \text{ Median Class } 19.5 - 29.5(20 - 29)$$

$$L_1 = 19.5 \quad n = 40 \quad F_c = 10 \quad f_m = 12 \quad C = 29.5 - 19.5 = 10$$

$$Md = L + \frac{\left(\frac{n}{2} - F_c\right)}{f_m} \times c$$

$$Md = 19.5 + \frac{(20-10)}{12} \times 10$$

$$\underline{\underline{Md = 27.83}}$$

**(03 marks)**

**(b)**

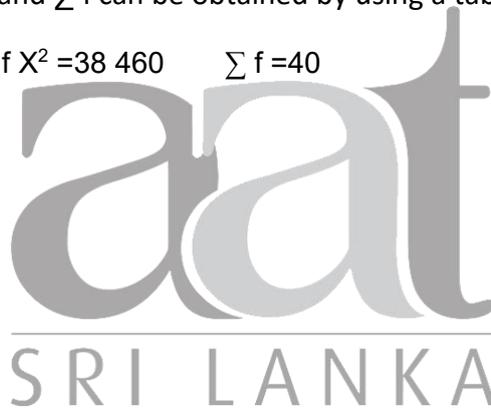
The values of  $\sum fX$ ,  $\sum fX^2$  and  $\sum f$  can be obtained by using a table or calculator.

$$\begin{aligned} \sum fX &= 1130 \\ \text{Mean} &= \frac{\sum fx}{\sum f} \end{aligned}$$

$$= \frac{1130}{40}$$

$$\text{Mean} = \underline{\underline{28.25}}$$

$$\sum fX^2 = 38460 \quad \sum f = 40$$



**(03 marks)**

**(c)**

$$\text{Standard Deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left[\frac{\sum fx}{\sum f}\right]^2}$$

$$\text{Standard Deviation} = \sqrt{\frac{38460}{40} - \left[\frac{1130}{40}\right]^2}$$

$$= 12.78 //$$

**(04 marks)**  
**(Total 10 marks)**

**End of Section B**

**Suggested Answers to Question Six:**

(A)

**Chapter 02.9 / 02.2**

(a)

1<sup>st</sup> Method (Using calculator)

$$PV = \frac{X(1-(1+r)^{-n})}{r}$$

$$X = \frac{PV \times r}{(1-(1+r)^{-n})}$$

$$PV = 800,000, \quad n = 5, \quad r = 0.14$$

$$X = \frac{800,000 \times 0.14}{(1-1.14^{-5})}$$

$$X = 233\,026.84$$

Annual installment = Rs. 233 026.84//

2<sup>nd</sup> Method (Using CDF table)

$$PV = x \times CDF$$

$$X = \frac{PV}{CDF}$$

$$PV = 800,000, \quad n = 5, \quad r = 0.14, \quad CDF = 3.433$$

$$X = \frac{800,000}{3.433}$$

$$X = 233\,032.33$$

Annual installment = Rs. 233 032.00 //

(04 marks)

(b)

$$S = X(1+r)^n \quad x = 50\,000, \quad n = 3, \quad r = 0.12,$$

$$S = 50\,000 \times 1.12^3$$

$$S = 70\,246.40$$

$$\text{Interest} = 70\,246.40 - 50\,000 = \text{Rs. } 20\,246.40//$$

(03 marks)

(B)

Chapter 2.6

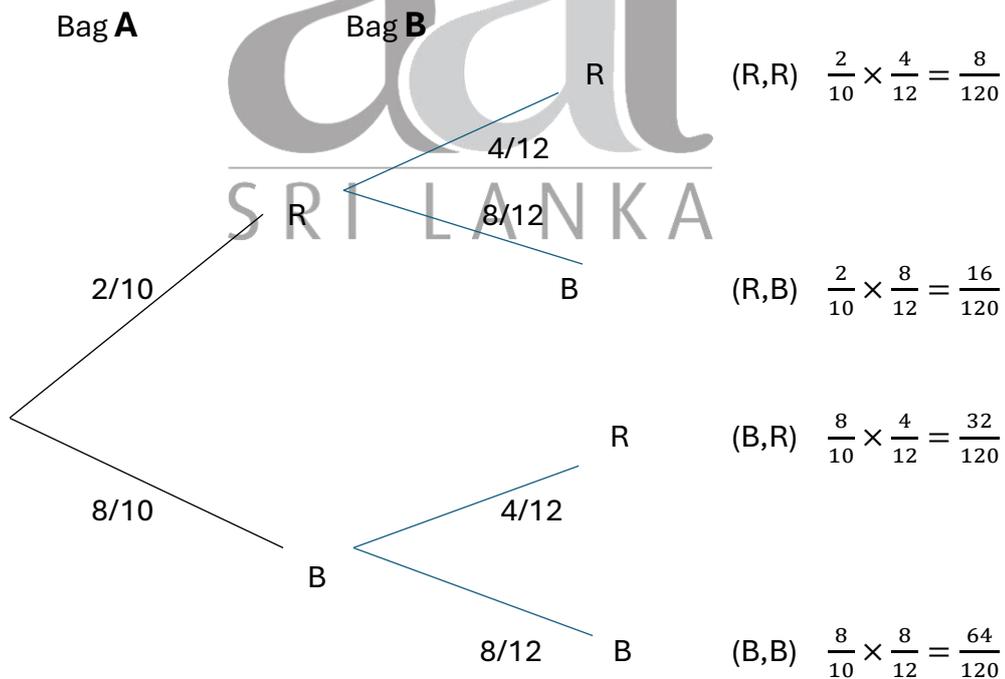
(a)

Year	Net Cash Flow	D.F. (10%)	Discounted Cash Flow (A)
	A		
0	(150,000.00)	1	-150000.00
1	25,000.00	0.909	22725.00
2	20,000.00	0.826	16520.00
3	32,000.00	0.751	24032.00
4	80,000.00	0.683	54640.00
5	60,000.00	0.621	37260.00
<b>NPV</b>			<b>5,177.00</b>

(04 marks)

(C)

Chapter 06.3



(a)

$$\Pr(R,R) = \frac{2}{10} \times \frac{4}{12} = \frac{8}{120} = \frac{1}{15} //$$

(02 marks)

(b)

$$\begin{aligned}\Pr(\text{At least one red ball}) &= 1 - \Pr(B,B) \\ &= 1 - \frac{64}{120} = \frac{7}{15} //\end{aligned}$$

(02 marks)

(D)

**Chapter 06.6**

X : weekly wages of workers in a company (Rs.)

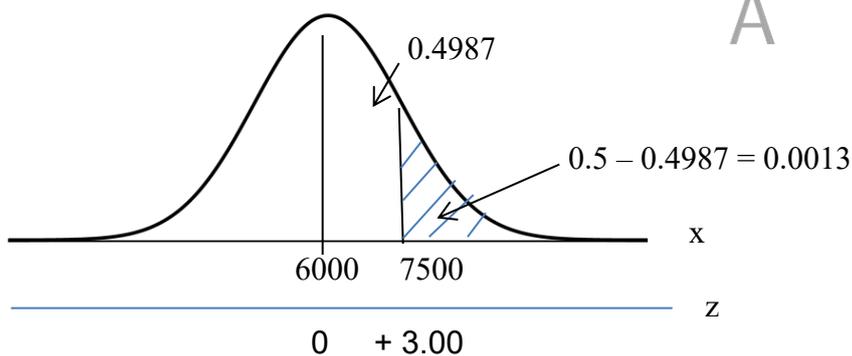
$$\mu = 6000 \quad \sigma = 500$$

$$Z = \frac{X - \mu}{\sigma}$$

$$Z = \frac{X - 6000}{500}$$

$$Z = \frac{7500 - 6000}{500}$$

$$Z = +3.00$$



$$\Pr(X > 7500) = 0.5 - 0.4987 = 0.0013$$

The number of workers whose weekly Wages are more than Rs.7,500/- =  $0.0013 \times 10000$   
= 13 //

(05 marks)  
(Total 20 marks)

**End of Section C**

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