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22MBA14

First Semester MBA Degree Examination, Dec.2025/Jan.2026
Statistics for Managers

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FOUR full questions from Q1 to Q7.*
2. Question No.8 is compulsory.
3. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
1	a.	Define Correlation. Mention types of correlation.	3	L1	CO1
	b.	In a class there are 40 boys and 30 girl students. Four students are selected at random. Find the probability of the selected students. i) None are boys ii) All are boys iii) At most 2 are boys, using binomial distribution.	7	L2	CO3
	c.	A company's past record shows the following data relating to sales revenue and expenses on advertising for six years. Both sales and expenses are in crores. Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 Sales | 125 | 132 | 145 | 150 | 160 | 170 Expenses | 15 | 16 | 20 | 21 | 23 | 25 Estimate sales revenue if budget for expenses on ads is 30 crores. Also estimate amount to be spent on advertising if sales target is 200 crores.	10	L2	CO2
2	a.	Mention the types of error in hypothesis testing.	3	L1	CO1
	b.	If two regression equations are given as $3X + 2Y = 26$ and $6X + Y = 31$. Find : i) Mean values of X and Y ii) Regression coefficients iii) Correlation coefficient.	7	L2	CO2
	c.	Using 3 year and 5 year moving average calculate trend values for the following data : Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 Value | 130 | 127 | 124 | 135 | 140 | 132 | 129 | 127 Year | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Value | 145 | 158 | 153 | 146 | 145 | 164 | 170 |	10	L2	CO3

3	a.	Which are the measures of dispersion used in descriptive statistics?	3	L1	CO1
	b.	A company produces tyres, tyre life is normally distributed. The mean life is found to be 40,000 kms. And S.D is 3000 kms. A new process is introduced to produce better tyres. A sample of 100 tyres are taken with a mean life of 40900 kms. Is the new tyre significantly better than the old tyre. Test at 1% level of significance Z_{table} 1%= 2.33 (one –tailed).	7	L3	CO3
	c.	A partly reproduced frequency distribution is given below : If modal marks of 60 students is given to be 47.5. Find the missing frequencies. Also calculate Mean and Median.	10	L2	CO2

Marks	30-35	35-40	40-45	45-50	50-55	55-60	60-65
No.of students	3	5	–	18	–	4	2

4	a.	Mention the properties of binomial distribution.										3	L1	CO3
	b.	Calculate Spear Man's rank correlation coefficient for the following data :										7	L2	CO3
	c.	The following data gives distribution of marks of 100 students. Calculate Q_1, Median, D_4 and P_{80}.										10	L2	CO2

X	10	18	80	54	49	29	32	20	35	48	64	15
Y	52	41	36	39	41	52	41	51	43	27	38	40

Marks less than	10	20	30	40	50	60	70	80
No. of students	5	13	20	32	60	80	90	100

5	a.	Four cards are drawn at random from a pack of 52 cards. Find the probability that : i) There are a King, Queen, Jack and Ace. ii) Two King and two Ace iii) All are Diamond.										3	L1	CO1
	b.	Explain with the help of flow chart procedure for testing a hypothesis.										7	L3	CO2
	c.	Calculate standard deviation and coefficient of variation for the following data. Total number of persons dying is 125.										10	L2	CO3

Age under (yrs)	10	20	30	40	50	60	70	80
No. of persons dying	15	30	53	75	100	110	115	125

6	a.	What do you mean by Regression Analysis? Give any two uses of it.	3	L1	CO1
	b.	Using least square method calculate trend values for the following data. Also estimate value for the year 2010. Year: 2002, 2003, 2004, 2005, 2006, 2007, 2008 Value: 75, 67, 68, 65, 54, 50, 41	7	L2	CO2
	c.	Fit a Poisson distribution to the following data : X: 0, 1, 2, 3, 4, 5 F: 40, 30, 20, 15, 10, 5	10	L2	CO3
7	a.	An urn contains 8 white and 3 red balls. If two balls are drawn at random. Find the probability that i) Both are white ii) Both are red iii) One of each colour	3	L2	CO2
	b.	Define Time Series Analysis. What are the components of time series?	7	L1	CO1
	c.	1000 students at college level are graded according to their IQ and their economic conditions. Use Chi-square test to find out whether there is any association between economic condition and level of IQ. IQ level: High, Medium, Low Economic condition: Rich (160, 300, 140); Poor (140, 100, 160) $(\chi^2_{0.05} \text{d.f } 2 = 5.991)$	10	L2	CO3
8	a.	In a certain locality, 1000 light bulbs are installed. Mean life of these bulbs were found to be 120 days. The life of bulbs are normally distributed with S.D of 20 days. Find how many bulbs have life i) less than 90 days ii) less than 140 days iii) more than 100 days iv) more than 130 days v) between 110 and 150 days.	10	L2	CO2
	b.	Compute Seasonal Indices using Ratio to Trend method. Year: Quarter I, Quarter II, Quarter III, Quarter IV 1993: 30, 40, 36, 34 1994: 34, 52, 50, 44 1995: 40, 58, 54, 48 1996: 54, 76, 68, 62 1997: 80, 92, 86, 82	10	L2	CO2

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