CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐   **20MBA14**

First Semester MBA Degree Examination, Jan./Feb.2021
Business Statistics

Time: 3 hrs.   Max. Marks:100

Note: *1. Answer any FOUR full questions from Q1 to Q7.*
2. Question No.8 is compulsory.
3. Use of statistical table is allowed.

1. a. Discuss the importance of Business Statistics. **(03 Marks)**
   b. From the prices of shares find out which is more stable in value. **(07 Marks)**

X	35	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

   c. Find the three Quartiles 7th decide and 84th percentile from the following data:

Wages(in Rs.)	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
No. of persons	1	3	11	21	43	21	9

   (10 Marks)

2. a. Mention any three properties of Arithmetic mean. **(03 Marks)**
   b. Explain Pictorially scatter diagram and how is it used in predictions? **(07 Marks)**
   c. The following data relate to age of employees and the number of days they reported sick in a month. Calculate Karl Pearson's co-efficient of correlation and interpret it.

Age (years)	30	32	35	40	48	50	52	55	57	61
Sick Days	1	0	2	5	2	4	6	5	7	8

   (10 Marks)

3. a. Define Mutually exclusive, equally likely and exhaustive events. **(03 Marks)**
   b. A systematic sample of 100 pages was taken from the Oxford dictionary and the observed frequency distribution of foreign words per page was formed to be as follows:

No. of foreign words (per page)	0	1	2	3	4	5	6
Frequency	48	27	12	7	4	1	1

   Calculate the expected frequency use in Poisson distribution. **(07 Marks)**
   c. From the following data obtain the two regression equation and calculate correlate co-efficient.

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

   (10 Marks)

4. a. What do you mean by Regression Analysis? Give any two uses of it. **(03 Marks)**
   b. You have been provided with the figures of production (in 000's tons) of sugar factory.

Year	2011	2012	2013	2014	2015	2016	2017
Production	77	88	94	85	91	98	90

   Fit a straight line by the method of least square and find trend values. **(07 Marks)**
   c. The income of a group of 10,000 persons were found to be normally distributed with mean Rs.7500 p.m. and standard deviation is Rs.500/-. Show that of this group about 95% has income exceeding Rs.6680 and only 5% had income exceeding 8320. What was the lowest income among the richest 100? **(10 Marks)**

5 a. Define binomial distribution. **(03 Marks)**

b. Particulars of regarding the income of two villages are given below:

	Village 'X'	Village 'Y'
Number of people	600	500
Average income (Rs.)	175	186
Variance	100	81

   (i) In which village the variate in income is greater?

   (ii) What is the combined standard deviation of the village 'X' and village 'Y' put together? **(07 Marks)**

c. Calculate Spearman's Rank correlation co-efficient between advertisement cost and sales from the following data:

Advertisement cost (000 Rs.)	39	65	62	90	82	75	25	98	36	78
Sales (lakhs Rs.)	47	53	58	86	62	68	60	91	51	84

(10 Marks)

6 a. What are the different measures of dispersion? Explain. **(03 Marks)**

b. Explain the different components of time series. **(07 Marks)**

c. One forth of the first year student admitted to a Bangalore college are out of state students. If the students are assigned at random to the dormitories, 3 to a room, what is the probability that in one room.

   (i) At least 2 of the 3 roommates are out of state students.

   (ii) At most 2 of the 3 roommates are out of state students. **(10 Marks)**

7 a. Define normal distribution. **(03 Marks)**

b. Explain the characteristics of Good Hypothesis. **(07 Marks)**

c. Define Hypothesis. Describe the formulation of Hypothesis with flow process chart. **(10 Marks)**

8 a. Write briefly on the following terms:

   (i) Type I error.

   (ii) Type II error. **(06 Marks)**

b. The daily wages of 1000 workmen are normally distributed around a mean of Rs.70 and with a standard deviation of Rs.5. Estimate the number of workers whose daily wages will be:

   (i) Between Rs.70 and 72

   (ii) Between Rs.69 and 72

   (iii) More than Rs.75

   (iv) Less than Rs.63

   (v) More than Rs.80

   (vi) Also estimate the lowest daily wages of the 100 highest paid workers. **(14 Marks)**

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