Printed pages: 03   **Roll No** ☐☐☐☐☐☐☐☐☐☐   **Sub Code: RMB104**

Paper ID: 7 0 0 4

MBA
(SEM I) THEORY EXAMINATION 2017-18
BUSINESS STATISTICS

Time: 3 Hours   *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   **2 x 7 = 14**

a.   Explain the concept of Correlation.

b.   Explain the concept of Binomial Distribution.

c.   Explain the uses of probability.

d.   Explain the conditions for using Z test.

e.   Explain the concept of regression.

f.   Explain the concept of kurtosis.

g.   Explain in brief about Type II error.

SECTION - B

2.   Attempt any *three* of the following: **7 x 3 = 21**

a.   Explain the concept of Index number and its uses.

b.   You are given the daily profits of 100 shops in a market located in one of the villages of Agra

Profit per Shop (Rs.)	No. of Shops
0-10	12
10-20	18
20-30	27
30-40	20
40-50	17
50-60	06

Calculate Mode and Median.

c.   Differentiate between Binomial distribution, Poisson distribution and Normal distribution.

d.   Calculate Spearman's   Rank Correlation coefficient from the following data.

Exam	Marks									
English	56	75	45	71	62	64	58	80	76	61
Maths	66	70	40	60	65	56	59	77	67	63

e.   Explain the steps in calculating one – way ANOVA.

SECTION - C

3.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

a) Compute an appropriate measure of skewness for the following data:

Sales (Rs. lakhs)	Number of companies
Below 50	12
50-60	30
60-70	65
70-80	78
80-90	80
90-100	55
100-110	45
110-120	25
Above 120	10

b) Find arithmetic mean and standard deviation from the following data. Also find coefficient of variation:

Age (Less than)	10	20	30	40	50	60	70	80
No. of Persons	15	30	50	75	100	110	115	125

4.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

a. Using Fisher's formula find the price index number from the following data:

Commodity	Unit	Base Year		Current Year	
		Price Rs.	Value (Rs.)	Quantity	Value (Rs.)
A	Kg	12.5	125	12	156
B	Kg	14	112	9	135
C	Metre	11	88	9	108
D	Kg	13	78	6	90

b. Fit a straight line trend by least squares method to the data given below and estimate trend for 2008:

Year	2002	2003	2004	2005	2006	2007
Sales (in '000 Rs.)	10	12	15	16	18	19

5.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

a. Find the two regression equations from the following

Year	2004	2005	2006	2003	2007	2008	2009	2010	2011
Supply	70	72	76	81	73	75	79	86	83
Price	145	140	130	124	133	127	120	110	116

b. Find Karl Pearson's Coefficient of Correlation between sales and advertisement expenditure of the following 10 firms given in thousands of rupees:-

Sales	40	40	45	50	55	55	50	50	55	40
Ad exp.	11	13	14	16	16	15	14	13	15	13

6.   **Attempt any *one* part of the following:**   **7 x 1 = 7 marks**

a) An aptitude test was conducted on 900 employees of the Metro Types Limited in which the mean score was found to be 50 units and standard deviation was 20. On the basis of this information, you are required to answer the following questions:

   i. What was the number of employees whose mean score was less than 30?
   ii. What was the number of employees whose mean score exceeded 70?
   iii. What was the number of employees whose mean score were between 30 and 70 ?

$\dfrac{x - \mu}{\sigma}$	**0.25**	**0.50**	**0.70**	**1.00**	**1.25**	**1.50**
Area	0.0987	0.1915	0.2734	0.3413	0.3944	0.4332

b) In a bolt factory, machines A,B& C manufacture 25%, 35% and 40% of the total output respectively. Of the total of their output, 5%, 4% and 2% are defective bolts. A bolt is drawn at random and is found to be defective. What is the probability that it was manufactured by Machine B.

7.   **Attempt any *one* part of the following:**   **7 x 1 = 7 marks**

a) An automatic machine was designed to pack 2 kg of vanaspati. A sample of 100 tins was examined to test the machine. The average weight was found to be 1.94 Kg with standard deviation of 0.10kg. Is the machine working properly?

b) A certain drug is claimed to be effective in curing colds. In an experiment on 164 persons with colds, half of them were given the drug and half of them sugar pills. The patient's reactions to the treatment are recorded in the following table:-

	Helped	Harmed	No Effect
Drug	52	10	20
Sugar Pills	44	12	26

Test the hypothesis that drug is no better than sugar pills for curing colds.