

MBA I Semester Supplementary Examinations December/January 2018/19

**BUSINESS STATISTICS**

(For students admitted in 2014 (LC), 2015 & 2016 only)

Time: 3 hours

Max. Marks: 60

**SECTION – A**

(Answer the following: (05 X 10 = 50 Marks))

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- 1 Enumerate the methods of measuring dispersion and state the characteristics of a good measure of dispersion.

**OR**

- 2 The coefficient of variation of wages of male workers and female workers are 55% and 70% respectively, while the standard deviations are 22.0 and 15.4 respectively. Calculate the overall average wages of all workers given that 80% of the workers are male.

- 3 State the properties of Karl Pearson's coefficient of correlation and explain how would you interpret the value of  $r$  with suitable example.

**OR**

- 4 Find the coefficient of correlation by Karl Pearson's method from the following table.

X	6	2	10	4	8
Y	9	11	?	8	7

Arithmetic means of X and Y are 6 and 8 respectively.

- 5 State the important characteristics and properties of binomial distribution. Under what conditions can a binomial distribution be applied?

**OR**

- 6 The following table shows the distribution of number of faulty units produced in a single shift in a factory. The data is for 400 shifts.

No. of faults	0	1	2	3	4
No. of shifts	138	161	69	27	5

Fit a Poisson distribution to the data.

- 7 In a large city A, 20% of the random sample of 1000 school children had defective eye sight. In another large city B, 15% of a random sample of 2000 children had the same defect. Is this difference between two proportions significant? Obtain 95% confidence limits for the difference in the population proportions.

**OR**

- 8 Two random samples were drawn from two normal population and their values are:

A	66	67	75	76	82	84	88	90	92		
B	64	66	74	78	82	85	87	92	93	95	97

Test whether the two population have the same variance at 5% level of significance.

( $F = 4.30$  at 5% level for  $v_1 = 10$  and  $v_2 = 8$ )

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- 9 The number of car accidents in a city was found as 20, 17, 12, 6, 7, 15, 8, 5, 16 and 14 per month. Use Chi-square test to check whether these frequencies are in agreement with the belief that occurrence of accidents was the same during the 10 month period. Test at 5% level of significance.

**OR**

- 10 In a survey of 200 girls of which 40% were intelligent, 30% had uneducated fathers, while 20% of the unintelligent girls had educated fathers. Do these figures support the hypothesis that educated fathers have intelligent girls? Test at 5% level of significance. (Table value of  $\chi^2 = 3.84$ )

**SECTION – B**

(Compulsory question, 01 X 10 = 10 Marks)

**11 Case Study:**

In a certain factory production can be accomplished by four different workers on 5 different types of machines. A sample study, in context of a two-way design without repeated values, is being made with two-fold objectives of examining whether the four workers differ from with respect to mean productivity and whether the mean productivity is the same for the 5 different machines. The researcher involved in this study reports while analyzing the data as under.

(i) Sum of squares for variance between machines = 35.2

(ii) Sum of squares for variance between work man = 53.8

(iii) Sum of square for total variance = 174.2

Set up ANOVA table for the given information and draw the inference about variances at 5% level of significance (Table value  $F = 2.53$ )

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