

## MBA I Semester Regular &amp; Supplementary Examinations December/January 2016/2017

**BUSINESS STATISTICS**

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

Time: 3 hours

Max. Marks: 60

All questions carry equal marks  
(Statistical tables is permitted in the examination hall)

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**SECTION – A**

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

- 1 What are the various methods of measuring dispersion? Explain each one with suitable examples.

**OR**

- 2 (a) Calculate mean for the following frequency distribution.

Value	10	27	28	34	55	38	52	40	45	57
Frequency	5	6	8	9	6	5	7	4	3	5

- (b) The monthly salaries of employees (in thousand rupees) is given in the following table. Compute the median salary of the employees.

Monthly salaries of employees (in thousand rupees)										
Employee	1	2	3	4	5	6	7	8	9	10
Salary	120	35	132	128	148	136	138	151	153	150

- 3 (a) Define and distinguish between correlation and regression.  
(b) Elaborate the utility of regression analysis.

**OR**

- 4 The sales revenue and advertisement expenses of a company for the past 10 months is given in the following table. Calculate the Karl Pearson's coefficient of correlation between sales and advertisement.

Sales and advertisement expenses for 10 months (in Rs. 1000's)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	
Advertisement expenses	10	11	12	13	11	10	9	10	11	14	
Sales	110	120	115	128	137	145	150	130	120	115	

- 5 What is binomial distribution? What are the main assumptions of a binomial distribution? Define mean and standard deviation in a binomial distribution.

**OR**

- 6 The retail price of a 5 kg bag of white cement of a company varies from Rs. 200 per bag to Rs. 230 per bag. Assuming that these prices are uniformly distributed, (i) Compute mean, variance and standard deviation of prices of this distribution. (ii) if a price is randomly selected, what is the probability that this price is in between Rs. 210 to Rs. 225? (iii) Compute the probability that this price is less than or equal to Rs. 227.

- 7 Define and briefly explain the following terms:

- Independent variable.
- Treatment variable.
- Classification variable.
- Experimental units.
- Dependent variables.

**OR**

- 8 A firm allows its employees to pursue additional income-earning activities such as consultancy, tuitions, etc. in their out-of-office hours. The average weekly earnings through these additional income earning activities is Rs. 5000 per month per employee. A new HR manager who has recently joined the firm feels that this amount may have changed. For verifying his doubt, he has taken a random sample of 45 employees. The sample mean is computed as Rs. 5500 and the sample standard deviation is computed as Rs. 1000. Use  $\alpha = 0.10$  to test whether the additional average income has changed in the population.

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- 9 What is  $\chi^2$  – distribution? What is its importance in business decision making?

**OR**

- 10 A company is trying to improve the work efficiency of its employees. It has organized a special training programme for all employees. In order to assess the effectiveness of the training programme, the company has selected 10 employees randomly and administered a well-structured questionnaire. The scores obtained by the employees are given below.

S.No	Before training	After training
1	30	35
2	32	34
3	37	31
4	34	33
5	36	33
6	33	37
7	29	37
8	33	42
9	30	40
10	32	43

At 95% confidence level, examine whether the training programme has improve the efficiency of employees.

### SECTION – B

(Compulsory Question)

01 X 10 = 10 Marks

- 11 **Case study:**

A company organized a training programme for three categories of officers: sales managers, zonal managers and regional managers. The company also considered the educational level of the employees. Based on their qualifications, officers were also divided into three categories: graduate, post graduate and doctorate. The company wants to ascertain the effectiveness of the training programme on employees across designation and educational levels. The scores obtained from randomly selected employees across different categories are given below.

		Designation		
		Sales managers	Zonal managers	Regional managers
Qualification	Graduate	30	34	38
		40	40	39
		42	42	40
		33	45	42
	Post Graduate	35	36	40
		39	38	43
		41	42	41
		39	43	32
	Doctorate	34	44	30
		38	45	28
		39	37	32
		35	38	29

Employ a two-way analysis of variance to determine whether there is significant difference in effects. Take  $\alpha = 0.05$ .

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