

Code: 14E00105

MBA I Semester Regular &amp; Supplementary Examinations December/January 2015/2016

**BUSINESS STATISTICS**

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

Time: 3 hours

Max. Marks: 60

All questions carry equal marks

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**SECTION – A**

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

- 1 What is the concept of coefficient of variation? What is the application of coefficient variation in business decision making?

**OR**

- 2 (a) Find the mean, median and mode for the following set of numbers:

(i) 3, 5, 2, 6, 5, 9, 5, 2, 8 and 6.

(ii) 51.6, 48.7, 50.3, 49.5 and 48.9.

- (b) From the following data, find the first and third quartiles:

| Serial No.                      | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  |
|---------------------------------|----|----|----|----|----|----|----|----|
| Daily wages (in hundred rupees) | 15 | 20 | 34 | 45 | 52 | 63 | 71 | 82 |

- 3 What are the assumptions of regression analysis? Distinguish between correlation and regression.

**OR**

- 4 Determine the line of regression for the following data, taking:

(a) X as the independent variable and Y as the dependent variable.

(b) Y as the independent variable and X as the dependent variable.

 $(\alpha = 0.05)$ 

| X | 12 | 21 | 28 | 25 | 32 | 42 | 43 | 39 | 55 |
|---|----|----|----|----|----|----|----|----|----|
| Y | 14 | 22 | 12 | 28 | 35 | 37 | 32 | 44 | 49 |

- 5 Define probability. Explain the concept of marginal probability, union probability, joint probability and conditional probability.

**OR**

- 6 In a toy manufacturing company, three machines namely, A, B and C, are employed to manufacture toys. Machines A, B and C manufacture 20%, 30% and 50% of the total toys, respectively. A quality control officer examined the machines and found that A, B and C produce 2%, 3% and 5% defectives of the total output. A toy is selected at random and is found to be defective. What are the probabilities that this toy came from machine A, B and C respectively.

- 7 What is hypothesis? Discuss the hypothesis testing procedure.

**OR**

- 8 Modern bicycles has conducted a survey among 100 randomly selected men and 120 randomly selected women. As per the findings, 25 men and 35 women say that the size of the wheel is a very important factor in purchasing a bicycle. On the basis of this data, can the company claim that a significantly higher proportion of women when compared to men believe that the size of wheels is a very important factor. Take 95% as the confidence level.

- 9 (a) What is the  $\chi^2$  goodness-of-fit test and what are its applications in decision making?  
(b) Under what circumstances is the  $\chi^2$  test of independence used?

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OR

- 10 A vice president (sales) of a garment company wants to determine whether the sales of the company's brand of jeans is independent of age group. He has appointed a marketing researcher for this purpose. This marketing researcher has taken a random sample of 703 consumers who have purchased jeans. The researcher conducted survey for three brands of the jeans, namely brand 1, brand 2 and brand 3. The researcher has also divided the age groups into four groups: 15 to 25, 26 to 2, 26 to 45 and 46 to 55. The observations of the researcher are provided in the following table:

| Age \ Brand  | Brand 1 | Brand 2 | Brand 3 | Row Total |
|--------------|---------|---------|---------|-----------|
| 15 to 25     | 65      | 75      | 72      | 212       |
| 26 to 35     | 60      | 40      | 64      | 164       |
| 36 to 45     | 45      | 52      | 50      | 147       |
| 46 to 55     | 55      | 65      | 60      | 180       |
| Column total | 225     | 232     | 246     | 703       |

Determine whether brand preference is independent of age group. Use  $\alpha = 0.05$ .

### SECTION – B

(Compulsory Question)

01 X 10 = 10 Marks

- 11 **Case study:**

A dealer of a motor cycle company believes that there is a positive relationship between the number of salespeople employed and the increase in the sales of bikes. Data for 14 randomly selected weeks are given in the following table:

| Weeks | No. of salespeople employed | Sales (in units) |
|-------|-----------------------------|------------------|
| 1     | 17                          | 34               |
| 2     | 14                          | 39               |
| 3     | 25                          | 60               |
| 4     | 40                          | 80               |
| 5     | 15                          | 38               |
| 6     | 18                          | 50               |
| 7     | 13                          | 35               |
| 8     | 11                          | 25               |
| 9     | 27                          | 51               |
| 10    | 12                          | 29               |
| 11    | 38                          | 89               |
| 12    | 36                          | 85               |
| 13    | 41                          | 90               |
| 14    | 28                          | 63               |

Questions:

- Develop a regression model to predict sales from the number of salespeople employed.
- Predict sales when number of sales people employed are 100.

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