

BUSINESS STATISTICS

(For students admitted in 2014 & 2015 only)

Time: 3 hours

Max. Marks: 60

All questions carry equal marks

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 χ^2 goodness-of-fit test and what are its applications in decision making?
(b) Under what circumstances is the χ^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.
