No. of Printed Pages—4

56 (SM)

[16–HRAGDA–M3]

MBA 3rd Semester Exam., 2016

STATISTICS FOR MANAGEMENT

[MBA (S3) 09]

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer any *five* from the following questions : 2×5=10

(a) Define independent events with examples.

(b) Under what conditions can a binomial distribution be approximated by a normal distribution?

(c) Two unbiased dice are thrown. What is the probability of getting 'sum of the numbers shown is less than 5'?

(d) What is the critical region?

(e) When is correlation positive and when is it negative?

(f) What are the two methods adopted in smoothing techniques?

2. Answer any *three* from the following questions : 4×3=12

(a) In a book of 500 pages, 300 typing errors are obtained. Assuming Poisson distribution, find the probability that 1 page will contain no error.

(b) What are mutually exclusive events? A family plans to have three children. List all the possible combinations and find the probability that all the three children will be boys.

(c) What do you mean by non-probability methods? What are the various non-probability sampling methods?

(d) Define Karl Pearson's coefficient of correlation. What is the relationship between coefficient of non-determination and coefficient of alienation?

3. Answer any *three* from the following questions : 6×3=18

(a) 10 persons randomly selected are found to have heights 63, 63, 66, 67, 68, 69, 70, 71, 71, 71 inches. Discuss the suggestion that the mean height in the population is 66 inches.

(b) Calculate the rank correlation coefficient between advertisement cost and sales from the following data :

Advertisement Cost ('000 ₹)	39	65	62	90	82
Sales (Lakhs ₹)	47	53	58	86	62
Advertisement Cost ('000 ₹)	75	25	98	36	78
Sales (Lakhs ₹)	68	60	91	51	84

(c) Define normal distributions. State the important properties of normal distribution.

(d) Explain the different theories of probability.

4. Answer any *four* from the following questions : 10×4=40

(a) What is time series? What are its main components? Explain briefly for each of them. 2+2+6

(b) Define chi-square test. What are the uses of a chi-square test? A dice is thrown 132 times with the following results :

Number Turned up	1	2	3	4	5	6
Frequency	16	20	25	14	29	28

Test the hypothesis that the dice is unbiased. 2+2+6

(c) What is binomial distribution? Explain the characteristics of binomial distribution. From an urn containing 20 black and 30 red balls, 6 balls are drawn at random. Find the probability that no red ball is selected. 2+3+5

(d) What do you mean by conditional probability? Explain the concept of multiplication rule. An urn contains 12 white balls and 8 red balls. Two balls are to be selected in succession at random and without replacement. What is the probability that—

(i) both balls are white;

(ii) the first ball is white and the second ball is red;

(iii) one white ball and one red ball are selected? 2+2+6

(e) What is regression analysis? What are the assumptions in it? Describe with an illustration the scatter diagram method. 2+3+5

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