G 8151

M.B.A. DEGREE EXAMINATION, JANUARY 2006.

First Semester

BA 1601 — STATISTICS FOR MANAGEMENT

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is joint probability?

2. Define Normal Distribution.

3. What is Sample survey?

4. What do you mean by point estimator?

5. Define t–distribution.

6. What do you mean by Type I error and Type II error?

7. What is scatter diagram?

8. What is Sign Test?

9. Define Secular Trend?

10. What is regression analysis?

PART B — (5 × 16 = 80 marks)

11. The screws produced by a certain machine were checked by examining samples of 12. The following table shows the distribution of 128 samples according to the number of defective items they contain :

Number of defectives in a sample of 12 :	0	1	2	3	4	5	6	7	Total
Number of samples :	7	6	19	35	30	23	7	1	128

(i) Fit a binomial distribution and find the expected frequencies if the chance of machine being defective is $\frac{1}{2}$. (10)

(ii) Find out the binomial distribution mean, variance and standard deviation. (6)

12. (a) Discuss what is sampling design? Describe the various types of sampling methods illustrating their use in practical situations.

Or

(b) An auto company decided to introduce a new six cylinder car whose mean petrol consumption is claimed to be lower than that of the existing auto engine. It was found that the mean petrol consumption for the 50 cars was 10 km per litre with a standard deviation of 35 km per litre. Test for the company at 5% level of significance, whether the claim the new car petrol consumption is 9.5 km per litre on the average is acceptable.

13. (a) The mean population of a random sample of 400 villages in Jaipur District was found to be 400 with a standard deviation of 12. The mean population of a random sample of 400 villages in Meerut District was found to be 395 with a standard deviation of 15. Is the difference between the two districts means statistically significant?

Or

(b) 1,000 students at college level were graded accounting to their I.Q. and the economic conditions of their homes. Use Chi square test to find out whether there is any association between economic condition at home and I.Q.

Economic Condition	I.Q.		
	High	Low	Total
Rich	460	140	600
Poor	240	160	400
Total	700	300	1000

Given for Chi Square Table value v = 1 @ 5% level is 3.84.

14. (a) A company's trainees are randomly assigned to groups which are taught a certain industrial inspection procedure by three different methods : At the end of the instructing period they are tested for inspection performance quality. The following are their scores.

Method A : 80, 83, 79, 85, 90, 68

Method B : 82, 84, 60, 72, 86, 67, 91

Method C : 93, 65, 77, 78, 88

Use H test to determine at the 0.05 level of significance whether the three methods are equally effective.

Or

(b) Ten competitors in a beauty contest are ranked by three judges in the following order.

1st Judge	1	6	5	10	3	2	4	9	7	8
2nd Judge	3	5	8	4	7	10	2	1	6	9
3rd Judge	6	4	9	8	1	2	3	10	5	7

Use the Rank Correlation to determine which pair of judges has the nearest approach to common taste in beauty.

15. (a) Calculate Karl Pearson Coefficient of Correlation from the following data :

Y \ X	200–300	300–400	400–500	500–600	600–700
10–15	–	–	–	3	7
15–20	–	4	9	4	3
20–25	7	6	12	5	–
25–30	3	10	19	8	–

Or

(b) Fit a straight line trend by the method of least squares to the following data. Assuming the same rate of change continues what would be predicted sales for the year 2006?

Year	1997	1998	1999	2000	2001	2002	2003	2004
Sales (Rs. in lakhs)	76	80	130	144	138	120	174	190

Calculate the trend values from 1997 to 2004.

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