Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer any TEN questions.

1. What is meant by Poisson distribution?

2. Define random experiment.

3. What is meant by statistic?

4. Define point and interval estimation.

5. Define sample.

6. Write the difference between estimate and estimator.

7. What are the different types of error?

8. Explain the types of hypothesis.

9. Write any two application of t-distribution.

10. What is meant by regression?

11. Define multiple correlation.

12. Write the difference between transportation and assignment problem.

24.

| Response | Area of work | |
Infavour	Production	Non-production
	129	171
Not in favour	31	69

Test whether there is an evidence for association between response and area of work.

25. The processing time in hours for the jobs when allocated to the different machines are indicated below. Assign the machine for the jobs so that the total processing time is minimum.

Machines

	M1	M2	M3	M4	M5
J1	9	22	58	11	19
J2	43	78	72	50	63
J3	41	28	91	37	45
J4	74	42	27	49	39
J5	36	11	57	22	25

Jobs

1 M. com – Quantitative Techniques for Business Decisions.

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Derive the mean and variance of binomial distribution.

14. A symmetrical die is throw to find the probability for (a) six, (b) not six, (c) seven, (d) less than seven.

15. What are the characteristics of sampling?

16. A random sample of 900 items has mean 3.4 and S.D 2.61. Can the sample be regarded as drawn from a population with 3.25 at 5% level?

17. The mean and variance of binomial distribution are 8 and 6. Find $P(x \geq 2)$.

18. You are given the following information about rainfall and production.

	Rainfall	Production
Average	30 cms	500kg
S.D	5 cms	100 kg

Correlation coefficient is O.E. Find mostly like production corresponding to the rainfall of 40 cms.

19. Derive the mathematical formulation of an assignment problem.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

20. If 10% of the screws produced by an automatic machine are defective. Find the probability that 20 screws at random, they have.

(a) Exactly 2 defectives

(b) At most 3 defective

(c) At least 2 defectives

(d) Between 1 and 3 defectives

Find mean and variance.

21. Explain the methods of sampling.

22. Derive the mean and variance of Poisson distribution.

23. Find two regression equations

X	10	12	14	16	18	20
Y	22	28	30	32	33	35

Estimate the value of Y when $X = 22$ and the value of X when $Y = 38$.