Time: 3 hrs.

Maximum: 30 marks

Part A

This part contains three bunches of questions carrying equal weightage. Each bunch has four questions. Answer all twelve questions.

A. Fill in the blanks :

1. In the study of relationship between variables, if there are only two variables, the correlation is said to be ....

2. Rank correlation method is used to study the correlation between ....

3. The quantitative expression of likelyhood of an event is termed as ....

4. Poisson distribution is a .... probability distribution.

B. Choose the correct answer from the bracket :

5. If two events are A and B; then A and B is written as :
   - a) $A \cup B$
   - b) A/B
   - c) $A \cap B$
   - c) $\bar{A} \cap \bar{B}$

6. Height of the Normal curve is maximum at the point of :
   - a) Standard deviation
   - b) Mean
   - c) First Quartile
   - d) Third Quartile

7. Which of the following is an example of Non-parametric test?
   - a) Z test
   - b) 't' test
   - c) F test
   - d) x^2 test

8. Two events are said to be mutually exclusive when :
   - a) Both of them can occur
   - b) Only one can occur
   - c) None can occur
   - d) None of these

C. Answer in one word :

9. The Standard Deviation of a sampling distribution is called as :

10. Sign test is an example for :

11. The only parameter of a poisson distribution is :

12. The % Area under Normal curve covered by Mean ± 1.96 Standard deviation is :

(12 x ¼ = 3 weightage)

Part B

Answer all nine questions in one or two sentences each. Each question carries a weightage of 1.

13. State any two uses of 't' distribution.

14. List two features of Bionomial distribution.

15. When are two events called independent?

16. What is ANOVA?

17. What are the two Errors in hypothesis testing

18. Define Poisson distribution.

19. Distinguish between Normal distribution and Standard Normal distribution.

20. What is a hypothesis? Give one example

21. Distinguish between Simple Correlation and Multiple Correlation.

(9 x 1 = 9 weightage)

Part C

Answer any five questions. Each question carries a weightage of 2.

22. What are the properties of a Normal curve?

23. The data given below relates to price and quantity supplied of a commodity over a period of 5 years.

Price (in Rs.)	6	7	5	9	8
Supply (in tons)	9	8	10	7	6

Calculate Pearson's Correlation Coefficient.

24. The odds against A solving problem in statistics are 8 to 6 and odds in favour of B solving the same problem are 14 to 16. What is the probability that (a) The problem is solved; (b) Problem is not solved.

25. In a town 20 accidents took place in a span of 200 days. Assuming that number of accidents follow Poison distribution, find the probability that there will be 3 or more accidents in a day.

26. The mean life of 100 electric bulbs produced by a company is found to be 1570 hours with a standard deviation of 120 hours. Test whether the bulbs could be considered as a random sample from a normal population with mean 1600 hours.

27. A die is tossed 120 times and the results obtained are :

No turned up	1	2	3	4	5	6	Total
Frequency	15	22	10	18	25	30	120

Test the hypothesis that die is unbiased.

28. A die is thrown. Find the probability of getting :
   - a) An even number
   - b) Number 3 up
   - c) 1 or 5 up
   - d) Number less than three

(5 x 2 = 10 weightage)

Part D

Answer any two questions. Each question carries a weightage of 4.

29. In a competitive examination 5000 students have appeared for a paper in Management. Their average marks was 62 and the standard deviation in marks was 12. If there are only 100 vacancies, find the minimum marks that one should score in order to get selection.

30. From the following data of the ages of husbands and ages of wives; find the regression equation of X on Y and Y on X. Also find the ages of wife when husband's age is 40.

Husbands age X : 23 27 28 29 28 30 31 33 35 36

Wife's age   Y : 18 20 27 21 22 29 27 29 28 29

31. Discuss the important Operations Research Techniques used in business.

$$(2 \times 4 = 8 \text{ weightage})$$