

8. If the variance of normal distribution is 9, then quartile deviation is :

- (a) $\frac{12}{5}$ (b) 3
(c) 6 (d) 2

State True or false (Questions 9-12) :

9. Geometric mean is a positional average.
10. Nominal scales are used for labeling variables.
11. t distribution is a symmetrical distribution.
12. Standard deviation is a relative measure of dispersion.

(12 × ½ = 6 marks)

Part B (Short Answer Type Questions)

Answer all questions.

Each question carries 2 marks.

13. What are different types of classification ?
14. Find the harmonic mean of 5,12, 9, 6,10, 18.
15. Define random experiment. Write down the sample space for the random experiment of tossing a coin three times.
16. What is Bernoulli trial ? Give the probability function of Bernoulli distribution.
17. Distinguish between census and sample method.
18. State any two applications of chi-square distribution.
19. Define standard normal distribution. What are the mean and variance of the distribution ?
20. Find mean deviation about median of 1500, 1250, 2000, 1850, 1000, 288, 1750, 1300, 1000, 2000.
21. One card is drawn from a standard pack of 52 cards. What is the probability that it is either a king or a queen ?
22. Write down the pdf of F distribution.

(10 × 2 = 20 marks)

Part C (Short Essays)*Answer any six questions.**Each question carries 3 marks.*

23. Distinguish between nominal and ordinal scales with examples
24. What are ogives ? Explain the method of obtaining median from ogives.
25. Define addition theorem and multiplication theorem on probability.
26. The following data shows the laboratory measurements (in mg/dl) of fasting blood sugar of 130 patients. Represent the data by means of a histogram :

Fasting Blood sugar	:	120-135	135-150	150-165	165-195	195-225	225-285	285-345
No. of patients	:	8	22	12	24	32	24	8

27. Following table gives the mean and variance (in rupees) of food expenditure per family per week among the working class families in two localities :

Families	Mean	Variance
Family A	640	243.36
Familiy B	580	327.61

Which family is more consistent with respect to the expenditure pattern ?

28. According that one in 80 births in cases of twins, calculate probability of 2 or more sets of twins on a day when 30 births occur using Poison approximation.
29. What is chi-square statistic ? Give the pdf of chi-square distribution with n degrees of freedom.
30. Find the parameter p for a binomial random variable X if $n = 6$ and $9 P(X = 4) = P(X = 2)$

(6 × 3 = 18 marks)

Part D (Essays)*Answer any two questions.**Each question carries 10 marks.*

31. (i) Point out any four properties of normal distribution.
- (ii) A car hire firm has two cars which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson variate with mean 1.5. Calculate the proportion of days on which some demand is refused.
- (iii) Define students *t* distribution. Give any two applications of *t* distribution.

Turn over

32. (i) The probability that India wins a cricket test match against Australia is $\frac{1}{3}$. India and Australia play three test matches :

What is the probability that ?

- (a) India will lose all the three testes and
(b) India will win at least one test match ?
- (ii) Fit a binomial distribution to the following data :

x	0	1	2	3	4
f	28	62	46	10	4

33. (i) Explain the desirable properties of a good average. How far does mode meet these requirements ?

- (ii) Find the mean and standard deviation of the following frequency distribution :

Class	:	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	:	3	61	132	153	140	51	2

(2 × 10 = 20 marks)