

- c) 0.68
 d) None of these.
- (v) A 90% confidence interval for the population mean is (18,24). Identify the sample mean.
 a) 18
 b) 21
 c) 24
 d) 6
- (vi) Find the correlation coefficient between X and Y:

X	-2	-1	0	1	2
Y	4	1	0	1	4

- a) 0
 b) 1
 c) -1
 d) None of these
- (vii) Suppose a 95% confidence interval for the proportion of Americans who exercise regularly is 0.29 to 0.37. Choose which one of the following statements is FALSE?
 a) It is reasonable to say that more than 25% of Americans exercise regularly.
 b) It is reasonable to say that fewer than 40% of Americans exercise regularly.
 c) The hypothesis that 33% of Americans exercise regularly cannot be rejected.
 d) It is reasonable to say that more than 40% of Americans exercise regularly.
- (viii) Identify the area under a standard normal curve.
 a) 0
 b) 1
 c) ∞
 d) None of these
- (ix) Binomial distribution deals with _____. Choose the correct option.
 a) Continuous random variable
 b) Discrete random variable
 c) Continuous & Discrete random variable
 d) None of the mentioned
- (x) Examine if A and B are mutually exclusive events, then
 a) $P(A \cap B) = P(A) \cdot P(B)$
 b) $P(A \cap B) = P(A) + P(B)$
 c) $P(A \cap B) = 0$
 d) None of these
- (xi) Suppose 5 observations from a normal population is taken: 18,12,16,14,15. Estimate the maximum likelihood estimator of the population mean?
 a) 18
 b) 12
 c) 15
 d) None of these
- (xii) A number is chosen at random among the first 120 natural numbers. Select the correct option for the probability of the number chosen being a multiple of 5 or 15.
 a) 1/5
 b) 1/8
 c) 1/16
 d) 1/9
- (xiii) If $SSE=200$ and $df(\text{Error})=10$, enumerate the value of mean square error.
 a) 20
 b) 2000
 c) 200
 d) 100
- (xiv) For a treatment A, it is found that $MSA=25$ and degrees of freedom = 2, then enumerate the Sum of squares of treatment A.
 a) 12.5
 b) 50
 c) 25
 d) 100
- (xv) We represent the bivariate data using, select the correct option

- a) Bar diagram
- c) Line diagram

- b) Scatter diagram
- d) None of these

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. If $3y-2x=9$ is the regression line of variable y on x , $r_{xy}=1/3$ and variance of x is 4, then estimate variance of y . (3)
- 3. Define population and sample with example. (3)
- 4. State and Prove Bayes' theorem. (3)
- 5. Compute the value of mean for poisson (λ) distribution. (3)
- 6. A random sample of size 20 from a Normal population gives a sample mean 42 and sample standard deviation 6. estimate the value of test statistics if the population mean is 44 using appropriate test statistics. (3)

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OR

- A random sample of size 40 from a Normal population gives a sample mean 24 and sample standard deviation 10. estimate the value of test statistics if the population mean is 26 using appropriate test statistics. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

- 7. Describe null and alternative hypothesis briefly with examples. (5)
- 8. Describe simple and composite hypothesis briefly with examples. (5)
- 9. If 5% of the electric bulbs manufactured by a company are defective, use poisson distribution to find the probability that in a sample of 100 bulbs ,i)none of defective, ii)5 bulbs will be defective. (5)
- 10. The mean yield for one acre plot is 662kilos with a s.d 32kilos.Assuming normal distribution, estimate how many one acre plots in a batch of 1000 plots would you expect to have yield i) over 700 kilos, ii)below 650 kilos. (5)
- 11. Show that the numerical value of correlation coefficient lies between (-1,1) (5)

12. A sample of nine plastic nuts yielded an average diameter of 3.1 cm with sample standard deviation of 1.0 cm. It is assumed from design and manufacturing requirements that the population mean of nuts is 4.0 cm. Evaluate the mean diameter of plastic nuts being produced (5)

OR

A fertilizer mixing machine is set to give 12 kg of nitrate for every quintal bag of fertilizer. Ten 100 kg bags are examined. The percentage of nitrate are: 14, 11, 13, 12, 13, 12, 13, 11, 13, 12. Evaluate if there is a reason to believe that the machine is defective? (5)
Critical value for t-distribution for 9 d.f. is 2.262.

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