



K22U 3656

Reg. No. : .....

Name : .....



Third Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/  
Improvement) Examination, November 2022

(2019 Admission Onwards)

COMPLEMENTARY ELECTIVE COURSE IN STATISTICS FOR  
GEOGRAPHY / PSYCHOLOGY

3C03STA (G&P) : Probability and Distribution Theory

Time : 3 Hours

Max. Marks : 40

PART – A

(Short Answer)

Answer **all 6** questions.

(6×1=6)

1. If A and B are mutually exclusive, then what is  $P(A/B)$  ?
2. If  $P(A \cup B) = 2P(A \cap B) = 0.4$ , then find  $P(A) + P(B)$ .
3. Define Sample Space.
4. What is standard error ?
5. What is the mean of Chi-square distribution with degrees of freedom 'n' ?
6. What is probability mass function ?

PART – B

(Short Essay)

Answer **any 6** questions.

(6×2=12)

7. Explain mutually exhaustive events and independent events.
8. Explain Poisson Distribution with parameter  $\lambda$ .

P.T.O.



9. Write multiplication theorem with respect to any two events A and B.
10. What is the mean, median, mode and variance of standard normal distribution ?
11. What is the mean and variance of exponential distribution ?
12. Explain Statistics. Write an example.
13. If  $X \sim B(n, p)$ , mean of X is 15 and variance of X is 10 then find the parameters of the distribution.
14. What are the applications of Chi-square distribution ?

## PART – C

## (Essay)

Answer **any 4** questions.

(4×3=12)

15. Explain probability distribution function. Write an example.
16. Write the axioms of probability.
17. Explain conditional probability.
18. Explain mathematical expectation of a discrete random variable. Write an example.
19. If two dice are thrown and X is the sum of outcomes. Find variance of X.
20. What is pair wise independence and mutual independence ?

## PART – D

## (Long Essay)

Answer **any 2** questions.

(2×5=10)

21. Establish Baye's theorem.
  22. If  $X \sim N(\mu, \sigma)$ , with  $\mu = 20$ ,  $\sigma = 5$ , find  $P(15 < x < 30)$ .
  23. Write the properties of Normal distribution.
  24. Explain Chi-square distribution, student's t distribution and F distribution. State the relation between them.
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