

24U493

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Name:

Reg.No:

FOURTH SEMESTER B.Voc. DEGREE EXAMINATION, APRIL 2026

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC21USDC4PD11 - PROBABILITY DISTRIBUTION AND SAMPLING THEORY

(Information Technology - Skill Component Course)

(2021 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. Find $P(X=1)$ if X follows a binomial distribution with mean 16 and variance 8.
2. Describe Lack of memory property of Geometric distribution.
3. Find the mean of Exponential distribution.
4. Find the mean of Gamma distribution.
5. Describe weak law of large numbers.
6. Discuss Central Limit Theorem.
7. Define sampling units.
8. Summarize the advantages of census over sampling.
9. State the principles of sampling.
10. Discuss about parameter and give an example.
11. List the characteristics of t- distribution.
12. Discuss F-Statistics.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Obtain the M.G.F of poisson distribution and hence find its mean and variance.
14. List out the properties of Normal distribution.
15. If $X \sim N(15, 16)$, Find $P(12 < X < 20)$.
16. State and prove Chebyshev's inequality.

17. If $E(x)=3$, $E(x^2)=13$, use chebychev's inequality to find a lower bound for $P(-2 < x < 8)$.
18. Describe sampling errors
19. Give the important properties of normal distribution..

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any **one** question. The question carries 10 marks.

20. Recall (i) SRSWOR (ii) SRSWR

21. Discuss about the distributio of $y = -2\log x$ if X has p.d.f $f(x) = \begin{cases} i & 0 \leq x \leq 1 \\ 0 & \text{otherwise} \end{cases}$.

(1 × 10 = 10 Marks)
