

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.CSc.(DS) - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - IV

22UDSAT4004 - Allied Statistics - II

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

- Define the following:
 - Mutually exclusive events
 - Equally likely events
 - Independent events
- Define probability mass function and distribution function of a discrete random variable.
- Write the properties of normal distribution
- Explain MLE of Poisson Distribution.
- Explain the procedure of testing of hypothesis.
- Define Chi-square distribution and t distribution
- A random variable X has the following distribution:

X:x	0	1	2	3	4	5	6	7
P(x)	0	k	2k	2k	3k	K^2	$2k^2$	$7k^2+k$

Compute (i) k (ii) $P(X < 6)$ and $P(X \geq 6)$

- A problem in statistics is given to three students A, B and C whose chances of solving it are $\frac{1}{2}, \frac{3}{4}$ and $\frac{1}{4}$ respectively. Determine the probability that the problem will be solved if all of them try independently?

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

- State and prove
 - Addition theorem of probability
 - Multiplication theorem of probability

Contd...

10. Define Poisson distribution. Obtain mean and variance of Poisson distribution.
11. Ascertain the MLE for normal parameters.
12. X is a normal variate with mean 30 and SD 5. Compute the probability that
 - (i) $26 \leq X \leq 40$,
 - (ii) $X \geq 45$
13. 1072 college students were classified according to their intelligence and economic conditions. Examine whether there is any association between intelligence and economic conditions.

Economic condition		Intelligence			
		Excellent	Good	Mediocre	Dull
	Good	48	199	181	82
	Not good	81	185	190	106
