2/31

2310N749

Candidate's Seat No : _____

B.Sc Sem.-3 Examination

CC-201

Statistics

October-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q-1	(A)	Derive mean and variance of Binomial distribution.	(7)
	(B)	Define moment generating function and describe the properties of Binomial distribution.	(7)
		OR	
Q-1	(A)	Derive mean and variance of truncated Binomial distribution. (truncated at 0)	(7)
	(B)	Explain relationship between raw moments and central moments of Poisson distribution.	(7)
Q-2	(A)	Derive mean and variance of Exponential distribution with mean θ.	(7)
	(B)	Derive any two properties of Rectangular distribution for continuous variable.	(7)
		OR	
Q-2	(A)	Derive mean and variance of Beta type – 1 distribution.	(7)
	(B)	State and prove additive property of Gamma distribution.	(7)
Q-3	(A)	Define joint probability distribution function of a random variable. State and prove the properties of distribution function.	(7)
	(B)	Define Discrete random variable, probability mass function and continuous distribution function.	(7)
		OR	
Q-3	(A)	Define Jacobian of transformation. Write general form of distribution of sum of two independent random variables.	(7)
	(B)	Define marginal probability function, conditional probability function and independent random variable.	(7)
Q-4	(A)	Explain distribution of largest order statistics and r^{th} order statistics.	(7)
	(B)	Obtain the distribution of range of a random sample of size n from the exponential distribution with pdf $f(x) = e^{-x}$, $x \geq 0$ $= 0$ otherwise	(7)
		OR	

(P.T.O)

Q-4	(A)	Prove that Negative Binomial as compound distribution of Binomial and Poisson distribution.	(7)
	(B)	Prove that Poisson as compound distribution of Binomial and Beta type -1 distribution.	(7)

Q-5 Attempt any seven out of twelve. (14)

(1) Give second name of Uniform distribution and write probability mass function of it.
(2) Give the meaning of discrete random variable.
(3) Write cumulants of Poisson distribution.
(4) State mean and variance of truncated Poisson distribution.
(5) Define Jacobian of transformation.
(6) Write joint pdf of r^{th} order statistics.
(7) Define marginal probability function.
(8) Explain distribution of sample Range.
(9) Define Bernoulli trials
(10) Write any two uses of Order statistics.
(11) Define compound distribution
(12) Write mean and variance of Beta type – 2 distribution.