GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Basic Sciences

Master of Science in Mathematics
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem II - C1PM206B - Mathematical Statistics

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Explain perfect positive and perfect negative correlation.	K2	(2)
2)	Find the probability distribution of the number of success in two tosses of a dice when a success is defined as getting a value 5 or 6.	K1	(3)
3)	Let a random variable and its probability mass function is given by x: 0 1 2 3 P(X = x): 1/3 1/2 0 1/6 Estimate the value of X	K2	(4)
4)	Show that $\Phi_{x+y} = \Phi_x \ \Phi_y$, where Φ is the mgf.	K2	(6)
5)	Develop the binomial distribution whose mean is 20 and variance 16.	K3	(6)
6)	If the mgf of a random variable X is $\left(\frac{1}{3}+\frac{2}{3}e^t\right)^5$, then solve P(X=2) for binomial distribution.	K3	(9)
7)	The nine items of a sample had the following values: 45, 47, 50, 52, 48, 47, 49, 53, 51 Examine the mean of nine items differ significantly from the assumed population mean of 47.5.	K4	(8)
8)	If the sum of the mean and the variance of binomial distribution of 5 trials is 4.8. Analyze the consistent value of p and q for a given binomial distribution.	K4	(12)
	OR		
	Analyze the value of 'p' in binomial distribution if n=6 and 9 P(X=4)=P(X=2) .	K4	(12)