

ADMISSION NUMBER									

School of Computing Science and Engineering

BCA with Industry Oriented Specialization in Artificial Intelligence and Machine Learning

Mid Term Examination - Nov 2023

Duration : 90 Minutes

Max Marks : 50

Sem III - E1UB301B - Probability for Data Science

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) If you know the value of $P(A)$, $P(B)$ and $P(A \cup B)$, then how to calculate $P(A \cap B)$? K2 (2)
- 2) Explain the concept of Baye's Theorem using suitable example. K1 (3)
- 3) The mean and variance of a binomial distribution are 4 and $4/3$. Find the probability of exactly 2 successes K2 (4)
- 4) Dicuss about Hypergeometric probability distribution and its applications in real life. K2 (6)
- 5) If the function $f(x)$ is defined as $f(x) = C * e^{-x}$, $0 < x < \infty$. Examine the value of C which changes $f(x)$ to a continuous probability distribution function. K3 (6)
- 6) Relate the measures mean and Standard deviation with Poisson distribution and binomial distribution? K3 (9)
- 7) Find the probability that at most 5 defective fuses will be found in a box of 200 fuses if experience shows that 2% of such fuses are defective. K4 (8)
- 8) An average of 0.61 soldiers died by horse kick per year in Russian army. You want to calculate the probability that exactly two soldiers died in 1989 assuming that the number of horse kick deaths per year follows a Poisson distribution. K4 (12)

OR

The probability function of a random variable X is defined as:

K4 (12)

$X = x$	-2	-1	0	1	2	3
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$P(X = x)$	0.1	k	0.2	2k	0.3	k
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Examine the value of k and $E(X)$.