BVP's Sardar Patel Institute of Technology,

Bhavans campus, Munshi Nagar, Andheri (W), Mumbai 400 058
(An Autonomous Institute Affiliated to Mumbai University)

Mid Semester Examination

October 2023

Max. Marks: 30 | **Duration: 1 Hour**
Class: SY B.Tech. | **Semester: III**
Course Code: MA203 | **Branch: COMP/AIML/CSDS**
Name of the Course: Probability and Statistics

Instructions:

(1) All Questions are compulsory.
(2) Draw neat, labelled diagrams, wherever necessary.
(3) Assume suitable data if necessary.

Q. No.	Question	Max. Marks	CO	BL
1.	a) Bag1 contains 5 white and 6 black balls and Bag2 contains 4 white and 3 black balls. One ball is drawn at random from one of the bags and it is found to be white. Find the probability that it was drawn from bag2. OR b) A coin is tossed three times. What is the probability of two or more heads given that there was atleast one head?	05	MA203.1	3
2.	State and Prove Bayes' theorem.	05	MA203.1	2
3.	Define probability mass function and probability density function. For what value of c the following function is a density function. $f(x) = ce^{-x/2}, x > 0.$	05	MA203.2	4
4.	1) The joint pmf of X is given in the following table. a) Find marginal of X. b) Find conditional frequency of Y given X=1.	05	MA203.2	2
5.	Let X and Y have joint density function $f(x,y) = k(x-y), 0 \le y \le x \le 1.$ a) Find k. b) Find conditional density of Y given X.	05	MA203.2	2
6.	If $X \sim Binomial(n,p)$. Find E(X).	05	MA203.2	1

X	Y		
	1	2	3
1	10/66	15/66	3/66
2	20/66	12/66	0
3	6/66	0	0

**********END**********