BHARATIYA VIDYA BHAVAN'S

SARDAR PATEL INSTITUTE OF TECHNOLOGY

MUNSHI NAGAR, ANDHERI (WEST), MUMBAI – 400 058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination March-2019

Max. Marks: 20 | Duration: 1 hrs
Class: FYMCA | Semester: II
Course Code: MCA 25 | Date: 15/ 03 /2019
Subject: : Probability & Statistics | Time:

Instructions: (1) All questions are compulsory.
(2) Use of scientific calculator is allowed.
(3) Assume any necessary data but justify the same.

Q. N.		Max Marks	CO
1.(a)	In a random arrangement of the letters of the word 'AHMEDNAGAR', find the probability that all the vowels come together.	5	3
(b)	A binary communication channel carries data as one of two types of signals denoted by 0 and 1. Owing to noise, a transmitted 0 is sometimes received as 1 and a transmitted 1 is sometimes received as 0. For a given channel, assume a probability of 0.94 that a transmitted 0 is correctly received as a 0 and a probability of 0.91 that a transmitted 1 is correctly received as a 1. Further assume a probability of 0.45 of transferring a 0. If a signal is sent, determine the probability of an error.	5	3
	OR		
	Of all graduate students in university 70% are women and 30% are men. Suppose that 20% and 25% of the female and male population, respectively, smokes cigarettes. What is the probability that a randomly selected graduate is a smoker?	5	3
2.(a)	X and Y are two random variables having joint density function $f(x,y) = \frac{1}{27}(2x+y)$, where x and y can assume only integer values 0, 1 and 2. Find the conditional distribution of Y for X=x.	5	4
(b)	Let X be a random variable with following probability distribution X: -3, 6, 9 P(X=x): 1/6, ½, 1/3 Find E(X) and $E(X^2)$ and using the laws of expectation, evaluate $E(2x+1)^2$.	5	5
	OR		
	If X is the Poisson variate such that: $P(X=2) = 9P(X=4)+90P(X=6)$, find λ the mean of X.	5	5

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