Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER-1 (NEW) EXAMINATION – WINTER 2016

Subject Code: 2714105 **Date:03/01/2017**

Subject Name: Probability and Random Process

Time: 2:30 pm to 5:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define Probability and describe how set theory is applicable to probability. **07**

(b) Describe the properties of probability. **07**

Q.2 **(a)** A box contains 6 white and 4 black balls. Remove the two balls at random without replacement. What is the probability that the first one is white and second one is black? **07**

(b) Explain Bayes theorem. **07**

OR

(b) Three switches as shown in Fig-(1) connected in parallel and operate independently. Each switch remains closed with probability P. Find the probability of receiving an input signal at the output. **07**

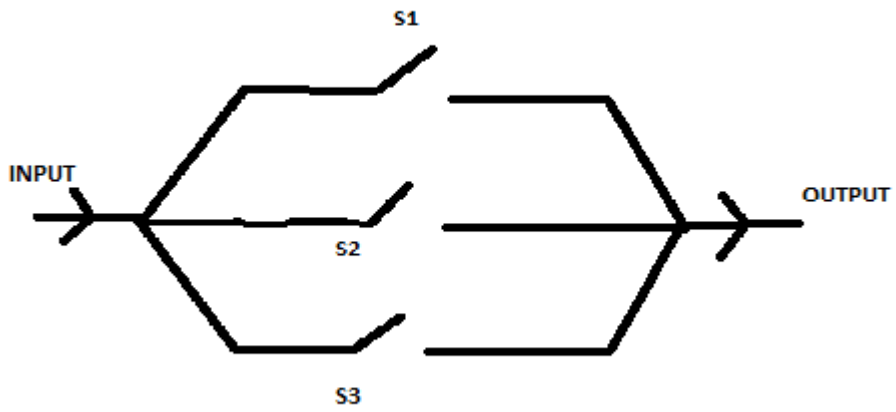

Fig-(1)

Q.3 **(a)** Define conditional probability and also describe the properties of conditional probability. **07**

	(b)	Define and describe the random variable.	**07**

OR

Q.3	**(a)**	A fair coin is tossed twice and let the random variable x represent the number of heads. Find Fx(x).	**07**
	(b)	Explain discrete and continuous type variables.	**07**
Q.4	**(a)**	Describe the properties of probability distribution function.	**07**
	(b)	Describe in detail: Markov Process	**07**

OR

Q.4	**(a)**	Describe in details : Gaussian Process	**07**
	(b)	Explain the meaning of stochastic process along with its properties.	**07**
Q.5	**(a)**	Describe the classes of random process.	**07**
	(b)	Describe the mean square derivative and integral of stochastic processes in brief.	**07**

OR

Q.5	**(a)**	Describe with any example probability of joint events.	**07**
	(b)	Describe in detail: Stationary stochastic processes.	**07**

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