

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2714105**Date: 06-01-2015****Subject Name: Probability and Random Process****Time: 02:30 pm - 05:00 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**

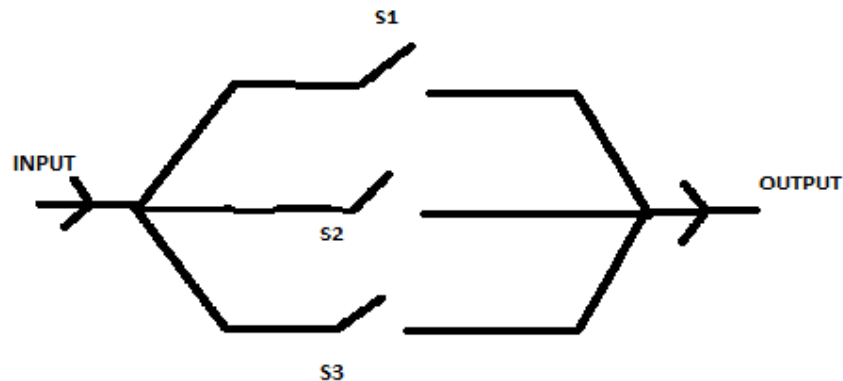


Fig-(1)

- 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 $F_X(x)$. **07**
 (b) Explain discrete and continuous type random 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**
