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**Question Paper Code : 11391**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011

Fourth Semester

Computer Science and Engineering

MA 2262 — PROBABILITY AND QUEUEING THEORY

(Common to B.Tech. Information Technology)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. The cumulative distribution function of the random variable  $X$  is given by

$$F_X(x) = \begin{cases} 0 & , x < 0 \\ x + \frac{1}{2} & , 0 \leq x \leq \frac{1}{2} \\ 1 & , x > \frac{1}{2} \end{cases}$$

Compute  $P[X > 1/4]$ .

2. Let the random variable  $X$  denote the sum obtained in rolling a pair of fair dice. Determine the probability mass function of  $X$ .
3. Given the two regression lines  $3X + 12Y = 19$ ,  $3Y + 9X = 46$ , find the coefficient of correlation between  $X$  and  $Y$ .
4. State central limit theorem.
5. Define :
- (a) Continuous-time random process
  - (b) Discrete state random process.