

Total No. of Questions : 8]

SEAT No. :

**P4753**

[Total No. of Pages : 2

**[4760] - 203**

**M.E. (Mechanical) (CADM & E)**

**SIMULATION & MODELING**

**(2012 Pattern) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) *Answer any Three questions from each section.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data if necessary.*

**SECTION - I**

**Q1)** a) What is simulation? Describe application areas in Mechanical Engineering. **[9]**

b) Describe Kolmogorov-Smirnov test in simulation. **[9]**

**Q2)** Define random number. How are they generated? What is role of random numbers in simulation? What are the advantages? Explain in detail any two techniques for random number generation. **[16]**

**Q3)** Discuss in detail Erlang Distribution, Discrete Uniform Distribution Empirical Continuous Distribution and Geometric Distribution with suitable examples. **[16]**

**Q4)** a) Discuss the systematic procedure for simulation model building. **[8]**

b) Describe the chi-square test in detail. **[8]**

**P.T.O.**

## SECTION - II

- Q5)** a) Describe Rejection Technique for Poisson Distribution. [8]  
b) Explain the concept of Machine Downtime with case study. [8]
- Q6)** a) Perform run tests on following sequence. [8]  
0.05 0.04 0.0185 0.27 0.86  
b) Describe importance of Verification and validation of simulation models.[8]
- Q7)** a) Elaborate the role of data collection in Input modeling. [8]  
b) Enlist and Elaborate Objectives and performance measures of Simulation.[8]
- Q8)** Discuss various properties of random numbers in detail. What kind of errors can be occurring during random number generation? Elaborate. [18]

