Register Number.....

M.E. DEGREE EXAMINATIONS: DECEMBER 2009

First Semester

INDUSTRIAL ENGINEERING

IEE502: System Modeling and Simulation

Time: Three Hours **Maximum Marks: 100**

Answer All the Questions:-

PART A (10 x 2 = 20 Marks)

1. What is meant by continuous systems? Give an example.
2. What are the statistical properties of random numbers?
3. Name entities, attributes, activities, events, and state variable for the following systems:
   (i) Production (ii) Banking
4. Mention any four situations, simulation can be used as an appropriate tool.
5. What is meant by verification and validation of a simulation model?
6. How Queuing problems are represented by Kendall's notations?
7. What is face validity and its importance?
8. What is meant by activity balking in queue?
9. What is pseudo random numbers?
10. Define utilization factor of service facility.

PART B (5 x 16 = 80 Marks)

11. (a) Explain in detail about the steps in a simulation study.

(OR)

(b) (i) Briefly describe the types of simulation models with example. (8)

(ii) What are the major areas of application of simulation system? (8)

12. (a) (i) Generate a sequence of random integers for $m = 10^2$, $a = 19$, $c=0$, and $X_0 = 63$. (8)

(ii) Describe the steps in Kolmogorov-smirnov test for frequency test of random numbers. (8)

(OR)

(b) Explain in detail about the inverse-transform technique for random variate generation.

13. (a) Explain in detail about the various tests for checking independency of random num

(OR)

(b) What are the factors to be considered for selecting a simulation software?

14. (a) Explain in detail about GPSS?

(OR)

(b) (i) What are the factors to be considered in the selection of a discrete system simulation languages?

(ii) Write merits and demerits of GPSS?

15. (a) Describe a model of single server queue simulation using GPSS with block diagram

(OR)

(b) Develop a simulation model by GPSS for an Inventory policy with flow charts.

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