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(Following Paper ID and Roll No. to be filled in your Answer Book)

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M.TECH.

(SEM. I) THEORY EXAMINATION, 2015-16

SIMULATION MODELING & ANALYSIS

[Time:3 hours]   [Total Marks:100]

Section–A

1. Attempt **all** parts. All parts carry equal marks. Write answer of each part in short.   (2×10=20)

   (a) What do you mean by system and system environment?

   (b) Give 5 advantages of simulation.

   (c) What do you mean by system modeling?

   (d) Define the term Black box.

   (e) What is the need for system modeling?

   (f) Define feedback system & its application.

   (g) What are the differences between analog and hybrid simulation?

   (h) What are discrete probability functions?

   (i) "Monte Carlo simulation is a special case of stochastic simulation" comment.

   (j) What do you understand by the term world model?

Section–B

Attempt **any five** questions from this section.   (10×5=50)

2. Differentiate between continuous & discrete systems with suitable model.

3. Discuss the element laws for friction element dashpot and the lever.

4. Explain the significance of random numbers. Also elaborate the properties of random variables.

5. Draw a diagram representing analog computer arrangements with the help of standard symbol for drawing block. Explain the automobile suspension model.   *uptuonline.com*

6. Name four principal entities, attributes and activities to be consdidered for the simulation of following system:

   (i) University registration system.

   (ii) Supermarket.

   (iii) Traffic system.

7. Write types of system simulation. Explain each with examples.

8. Define the D'Alembert law for translational as well as rotational mechanical system.

9. Explain Exponential Growth and Decay model.

Section–C

Attempt **any two** questions from this section.   (15×2=30)

10. Explain in detail about system dynamics diagram.

11. Write short notes on **any three** of the following:

    (i)   FMS

    (ii)   Simulation of waiting line system.

    (iii)   Principles of simulation modelling.

    (iv)   Linear and non-linear systems.

    (v)   Monte Carlo method.

12. Explain in detail about Simulation of PERT network.

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