

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]  
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**B. Tech 7th Semester Examination**  
**Simulation & Modeling (NS)**

IT-413

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Attempt five questions in all, selecting one question each from section A, B, C & D. Section-E is compulsory.

**SECTION - A**

1. (a) What is system? What is continuous and discrete system? Explain and give an example each of continuous and discrete system. (10)
- (b) Explain Monte Carlo Method with the help of suitable example. (10)
2. (a) What is simulation? Explain with the help of Example
  - (i) When Simulation is the appropriate tool?
  - (ii) When Simulation is not appropriate tool? (10)
- (b) Give comparison of Simulation and analytical method. (10)

**SECTION - B**

3. (a) Explain with an example the Kolmogorov-Smirnov test for random numbers. (10)
- (b) Explain Poisson distribution. (10)

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4. (a) Explain Normal distribution. (10)
- (b) What are all the different acceptance rejection techniques? Explain one technique in detail. (10)

**SECTION - C**

5. How model can be build verification and validate? Explain with diagram. (20)
6. (a) What is model reasonableness & explain how current contents and total count can verify it? (10)
- (b) Explain calibration and validation of models with the help of diagram. (10)

**SECTION - D**

7. Write a note on General Purpose Simulation languages. (20)
8. How we can make use of database and artificial languages in area of modeling and simulation? Explain. (20)

**SECTION - E**

9. (a) What is Model and Component of the system?
- (b) List the application areas/Industry domains of simulation.
- (c) Explain the properties of random number & its consequences.
- (d) Name several entities, attributes, activities, events & state variables of a typical automatic teller machine (ATM)? (4×5=20)