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Total No. of Pages: 02
Total No. of Questions: 09

MCA (Sem.-5th)
SYSTEM SIMULATION AND MODELING
Subject Code: MCA-504-A
Paper ID: [B0126]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATE:

- 1. Section A, B C and D contains two questions each carrying Ten marks. Students are required to attempt any one question from each section.*
- 2. Section E is compulsory carrying 20 marks.*

SECTION-A

- Q.1. Discuss briefly the various types of models. Explain the principle of modelling. 10
- Q.2. Differentiate between:
- (b) Continuous and Discrete system.
 - (c) Deterministic and Stochastic system. 10

SECTION-B

- Q.3. What do you understand by non-uniformly distributed random numbers? Explain any two methods to generate the non-uniformly distributed random numbers.
- Q.4. What is discrete system simulation? Explain different models for time advancement mechanisms for the same with the help of an example and activity flow diagram.

SECTION-C

- Q.5. What are the components of a queuing System? Discuss various measures of performance for queuing systems. 10
- Q.6. Discuss in detail the simulation of single server queuing system with Poisson arrival pattern. 10

SECTION-D

- Q.7. Write short note on:
- (a) Inventory System
 - (b) Simulation Languages 10
- Q.8. Discuss the case study of simulation of telephone system. 10

SECTION-E (COMPULSORY)

Q.9. Write briefly:

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| (a) | What do you understand by uniformly distributed random numbers? | 2 |
| (b) | Differentiate between open and closed system. | 2 |
| (c) | What are pseudo random numbers? | 2 |
| (d) | Define stochastic variables. | 2 |
| (e) | Differentiate endogenous and exogenous activities. | 2 |
| (f) | What are the general steps involved in the simulation Process? | 2 |
| (g) | List four advantages of Simulation study. | 2 |
| (h) | Use multiplicative congruential method to generate 4 random numbers,
given $m = 15$, $a = 7$, $X_0 = 9$. | 2 |
| (i) | Write applications of queuing system. | 2 |
| (j) | List features of GPSS. | 2 |

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