

Roll No.

Total Pages : 03 ,

OMCA/M-17 10008
SYSTEM SIMULATION
MCA-203

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting exactly *one* question from each Unit. Q. No. 1 is compulsory.

(Compulsory Question)

1. (a) What is Simulation ?
- (b) Differentiate between discrete and continuous system. <http://www.kuonline.in>
- (c) Name the various methods for generating non-uniform random numbers.
- (d) What is a general queuing system ?
- (e) What are the various parameters associated with an inventory system ?
- (f) When should simulation be used ?
- (g) Differentiate between continuous and discrete simulation languages.
- (h) What do you mean by Validation ?

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Unit I

2. (a) What is a system ? Describe various types of systems. What is the use of system modeling ? 7
- (b) How can system boundaries and environment be decided ? Explain using suitable examples. 7
3. Comment on the need of studying models. Also discuss the situations when modeling should be used and when simulation should be used with the help of suitable example. 14

Unit II

4. (a) Write an algorithm to generate random numbers. 7
- (b) Describe the three for testing randomness of numbers. 7
5. Simulate a water reservoir system taking your own assumptions. 14

Unit III

6. Simulate a two-server queuing system. Draw a flowchart for the same. Generate the formula for finding : 14
- (a) Maximum queue length
- (b) Average number of customer in the queue

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- (c) Maximum waiting time
 - (d) Average fraction of the time a customer spends waiting in a queue.
- Take your own assumptions. 14

7. (a) Describe any *five* methods for forecasting. 7
- (b) Explain the following w.r.t. Inventory models : 7
- (i) Multi-item production
 - (ii) Capital restriction
 - (iii) Varying demands
 - (iv) Gradual replenishment
 - (v) Quantity discounts.

Unit IV

8. How can you find run length of static and dynamic experiments ? Explain using appropriate examples. 14
9. Explain the following in detail : 14
- (a) SIMSCRIPT
 - (b) SIMULA.

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