Printed Pages: 02 **Sub Code: KCA-023**

Paper Id: 232343 **Roll No.** | | | | | | | | | | |

MCA
(SEM III) THEORY EXAMINATION 2022-23
SIMULATION & MODELING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a) What do you mean by System modeling?
b) Define the term "Simulation".
c) Explain Service Utilization?
d) What do you mean by Single Server Queuing System?
e) What is test of Randomness?
f) List different methods of generating random numbers?
g) What is Multiple Linear Regression?
h) What is the real-world application of simulation?
i) What do you mean by simulation of computer network?
j) What do you mean by PERT?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) What do you mean by model? Explain the various system models.
b) Compare and Contrast different system design approaches?
c) Explain Distributed Lag Model with a suitable example? Demonstrate its uses.
d) Explain logistic curves with the help of diagram.
e) Draw a network to the following information and obtain the early and late start and completion times and determine the critical activities:

Activity:	1-2	1-3	2-6	3-4	3-5	4-6	5-6	5-7	6-7
Duration:	4	6	8	7	4	6	5	19	10

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a) Explain finite and infinite calling population model with example?
b) Give some advantages and disadvantages of validation and simulation?

4. Attempt any *one* part of the following: **10 x 1 = 10**

a) What are the different types of System Simulation? Explain each with example?
b) Explain the macro dynamic model with the help of diagram?

5. Attempt any *one* part of the following: 10 x 1 = 10

a) Give the difference Analog VS Digital Simulation?
b) What is the method of testing random number generation of non-uniformly distributed random number?

6. Attempt any *one* part of the following: 10 x 1 = 10

a) What type of model is the world model? Explain it in detail?
b) Draw a neat diagram for System Dynamic? Explain its various features?

7. Attempt any *one* part of the following: 10 x 1 = 10

a) Name any two-simulation software package and explain in details capability of software?
b) What do you mean by critical path? Explain any algorithm for finding the critical path?