CLASS: MCA   SEMESTER : V
BRANCH: MCA   SESSION : MO/2022

SUBJECT: CA603 SYSTEM SIMULATION AND MODELLING
TIME: 03 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. **Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

Q.1(a)   Explain exogeneous activities with example.   [2]
Q.1(b)   Explain endogeneous activities with example.   [3]
Q.1(c)   Define factory system,List entities and activities involved.   [5]

Q.2(a)   What is the problem of market economy.   [2]
Q.2(b)   Define cobweb model to solve market economy model.   [3]
Q.2(c)   Represent mathematical model of the national economy using distributed lag models **[5]**

Q.3(a)   Define system dynamics.   [2]
Q.3(b)   Explain Multi-segment models.   [3]
Q.3(c)   Give the realistic market model using modified exponential growth model   [5]

Q.4(a)   Define Random number.   [2]
Q.4(b)   Give different properties of random number.   [3]
Q.4(c)   Generate random number using linear congruential method with $\lambda=1, C_0=10, \mu=5, P=10$ [5]

Q.5(a)   Define queuing system,explaining its characteristics.   [2]
Q.5(b)   Suppose in a single server system arrival rate $\lambda =10$ unit,service rate $\mu =5$ unit,find the server utilization. [3]
Q.5(c)   Define discrete event simulation. Simulate telephone system using different steps involved in simulating [5]
         discrete event simulation.

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