Q.21 Describe the use of simulation in manufacturing system optimization. (CO4)

Q.22 How does PERT simulation help in project management? (CO3)

SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 Explain the different types of random number generators used in simulations along with their properties. (CO2)

Q.24 Discuss in detail the various statistical considerations in simulation modeling and analysis. (CO3)

Q.25 How can simulation be used for decision making in manufacturing systems with an example? (CO4)

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Roll No. .....

6th Sem.
Branch : Automation & Robotics
Sub. : Modeling, Simulation & Analysis of Manufacturing Systems

Time : 3 Hrs. **M.M. : 60**

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (6x1=6)

Q.1 Which of the following is a key advantage of discrete event simulation? (CO1)

a) Continuous representation of real systems

b) Random behaviour elimination

c) Detailed analysis of system performance

d) No need for statistical validation

Q.2 Which type of system changes state only at discrete points in time? (CO1)

a) Continuous system b) Deterministic system

c) Discrete event system d) Stochastic system

Q.3 What is the main use of random numbers in simulation? (CO2)

a) Increase computational speed

b) Improve graphical representation

c) Introduce variability in model inputs

d) Reduce system complexity

Q.4 The queuing theory the term "Utilization factor" refers to: (CO2)

a) The ratio of service time to arrival rate

b) The number of servers in a system

c) The length of the queue

d) The number of arrivals per unit time

Q.5 Which of the following is NOT an application of simulation in manufacturing? (CO4)

a) Production scheduling

b) Inventory control

c) Energy efficiency analysis

d) Direct cost reduction without analysis

Q.6 In a Monte Carlo simulation, the results are influenced by: (CO2)

a) Deterministic equations b) Random sampling

c) Fixed inputs d) Linear functions only

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define simulation in the context of manufacturing systems. (CO1)

Q.8 What is the purpose of generating random numbers in simulation? (CO2)

Q.9 Name any two commonly used simulation software. (CO3)

Q.10 What are the two main types of system simulations? (CO2)

Q.11 State one major challenge in output analysis of a simulation model. (CO3)

Q.12 What does PERT stand for in project management? (CO3)

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 Differentiate between continuous and discrete simulation models with examples. (CO1)

Q.14 Explain the significance of random number generation in simulation. (CO2)

Q.15 Describe the role of statistical considerations in simulation studies. (CO2)

Q.16 How is simulation applied in queuing systems? Provide an example. (CO3)

Q.17 Explain the process of inventory system simulation and its applications. (CO3)

Q.18 Discuss the significance of output analysis in simulation. (CO3)

Q.19 Compare Monte Carlo simulation and discrete-event simulation. (CO2)

Q.20 What are they key features of simulation languages and software? (CO3)