BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2023)

CLASS: BTECH   SEMESTER : VI
BRANCH: PROD &IE   SESSION : SP/2023

SUBJECT: PE222 DISCRETE EVENT SYSTEM SIMULATION
TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 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**

			CO	BL
Q.1(a)	Give one example each for discrete and continuous simulation problems and plot graphs. Take time in X-axis and system variable in Y axis.	[2]	2	3
Q.1(b)	Construct a flow chat indicating steps of modeling and simulation. Identify and explain the iterative processes present in the flowchart.	[3]	2	2
Q.2(a)	Differentiate between model verification and validation.	[2]	3	2
Q.2(b)	Give a detail account on model taxonomy.	[3]	3	2
Q.3(a)	For a warehouse, identify any four entities their attributes and state variables.	[2]	1	3
Q.3(b)	Explain queue behavior and queue discipline briefly.	[3]	2	2
Q.4(a)	Differentiate between activity and delay in the context of simulation.	[2]	2	2
Q.4(b)	Compare between a deterministic and stochastic inventory model and describe how simulation helps in the stochastic inventory model.	[3]	3	3
Q.5	Jobs arrive at a machine with inter-arrival time discrete uniformly distributed with probability p(a) = 0.25 with a = 3, 5, 6, 8 min. Operation time follows probability distribution N (4, 1) min. Simulate the discrete event system for completion of five jobs to find average cycle time. Use random standardized normal numbers as 1.98, 0.23, −0.68, −1.44, 2.45	[5]	4	4

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