BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : IV**
BRANCH: PROD **SESSION : SP/2023**

SUBJECT: PE222 DISCRETE EVENT SYSTEM SIMULATION

TIME: 3 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*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Construct and discuss a flowchart for depicting important steps in a modelling and simulation project. Explain the need for 'experimental design' step in it.	[5]	1	3
Q.1(b)	Give any five reasons for considering simulation as an appropriate tool and any five distinct areas of application for simulation.	[5]	1	2
Q.2(a)	What is a queueing system? Decode the meaning of queueing system with the notation of A/S/c/K/N/D	[5]	2	3
Q.2(b)	Three random variables R1, R2 and R3 are distributed as Rl : 10 ± 2 R2 : 12 ± 8 R3 : 5 ± 4 If K= (2R1 + 3R2)/R3 Simulate 8 values of random variable K and compute the average value.	[5]	2	4
Q.3(a)	Describe some prominent entities, attributes and model variables as used in the simulation of manufacturing and material handling systems.	[5]	3	2
Q.3(b)	Explain about modeling downtimes (scheduled and unscheduled) and time-to-failures in the simulation of manufacturing systems.	[5]	3	3
Q.4(a)	Write the features of exponential distribution and construct the PMF and CDF of an exponential distribution with failure rate of λ.	[5]	5	3
Q.4(b)	Mention the various selection rules for discrete and continuous probability distributions in modeling and simulation.	[5]	4	3
Q.5(a)	Elaborate the six model validation techniques with suitable examples.	[5]	4	3
Q.5(b)	Describe the various steps as applied during model verification.	[5]	5	2

::::::28/04/2023::::::M