JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-IV Semester (CSE/IT)

COURSE CODE(CREDITS): 18B11CI413 (2) MAX. MARKS: 25

COURSE NAME: Modeling and Simulation Techniques

COURSE INSTRUCTORS: RKI,SGL,VSG,SWT MAX. TIME: 1 Hour 30 Minutes

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Note: *(a)All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problem

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1. What is the significance of queuing system modeling? Implement the queuing system modeling with steady state condition to find out probability of having n processes (P_n) in single server with finite queue length. [2+3] [CO3]

2. Explain the significance of different parameters of queuing system. Why we do not consider two events together such as 1 arrival of process and 1 service of process in queuing system modeling? Explain the term Bulking, Reneging and Jockeying. [2+1+2] [CO3]

3. Implement the relationship modeling between expected length of system and queue with respect to 1 server with infinite queue length. What is the preferable criterion for (λ/μ) for this type of queuing system and why? [3+2] [CO3]

Consider λ and μ are expected rate of arrival process and expected rate of served processes respectively.

4. Find out the probability of n persons in the system (P_n) with respect to multiple servers with infinite queue length. How does it improve the expected length of system from single server model with infinite queue length ? [3+2] [CO3]

5. Please consider 2 servers with infinite queue length, expected rate of arrival process and expected rate of served processes are 10/hr and 6/hr.

(i) Find out the probability that user get server.

(ii) Find out the probability for no queue length.

(iii) Expected queue length. [2+2+1] [CO3]