

Modeling and Simulation (CSC 420)

Assignment 2



Submitted By-

Your Name

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Submitted To-

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Instructions:

- Draw diagrams wherever relevant. Explain your notations explicitly and clearly.
- An incomplete assignment is NOT acceptable for submission.
- Once you submit your assignment, you will be expected to answer all the questions there INDEPENDENTLY. You may be asked to answer any question of the assignment in the class.

Q1. If $A = \{3, 4, 5\}$, $B = \{5, 4, 7, 8, 9\}$ and $C = \{m, n, x\}$ then calculate the following:

- i) S
- ii) $A \oplus B$
- iii) $A \cap B$
- iv) A^c

Q2. There are 8 black pens and 10 blue pens in a jar. If you take a pen without looking and then take another pen without replacing the first, what is the probability that you will get 2 black pens?

Q3. Consider the following single-server queueing system from time = 0 to time = 20 sec. Arrivals and service times are:

- Customer #1 arrives at $t = 1$ second and requires 5 seconds of service time
- Customer #2 arrives at $t = 1$ second and requires 2 seconds of service time
- Customer #3 arrives at $t = 2$ seconds and requires 3 seconds of service time
- Customer #4 arrives at $t = 12$ seconds and requires 6 seconds of service time

Solve for system throughput (X), total busy time (B), mean service time (T_s), utilization (U)