**PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY, SAMALKHA**
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**
**Assignment-2**

**Date of Submission: 3/6/22**

Q1: What is semaphore? How it can solve the problem of critical section?

Q2: Explain minimum requirements of solution to critical section problem.

Q3: Discuss race condition using an example? Discuss briefly with the help of Producer and Consumer problem.

Q4: Consider the following system state:

| Allocation matrix | Max Need | Available |
|---|---|---|
| A B C D | A B C D | A B C D |
| P1 0 0 1 2 | 0 0 1 2 | 1 5 2 0 |
| P2 1 0 0 0 | 1 7 5 0 | |
| P3 1 3 5 4 | 2 3 5 6 | |
| P4 0 6 3 2 | 0 6 5 2 | |
| P5 0 0 1 4 | 0 6 5 6 | |

(a) What is the content of matrix need?

(b) Is the system in safe state?

(c) Is the system request from P1 arise for (0 4 2 0) be safely granted immediately?