Lamrin Tech Skills University Punjab

University School of Engineering & Technology

Program: B.Tech | MST-II Nov. 2024
Semester: 3rd | Time: 1.5 hrs. | Max. Marks: 25
Roll No: _____

Subject: System Programming and Operating System (UGCS-204)

INSTRUCTIONS TO CANDIDATES

1. SECTION–A is Compulsory carrying one marks each.
2. SECTION-B you have to attempt 3 questions carrying 4 marks each.
3. SECTION-C you have to attempt 1 question carrying 8 marks each.

Section-A (5x1=5)

(i) Which state indicates a process is actively using the CPU?
(ii) What is the full form of PCB?
(iii) Define Throughput.
(iv) What is a semaphore.
(v) List the two types of semaphores?

Section-B (3x4=12)

Q2. Explain the different states of a process with a neat diagram.

Q3. Differentiate between a process and a thread.

Q4. Describe the Producer-Consumer problem and its solution using semaphores.

Q5. Define the Process Control Block (PCB) with neat diagram and list the information it contains.

Q6. Describe Peterson’s Solution for achieving mutual exclusion and analyze its limitations.

Section-C (1x8=8)

Q7. Construct the Gantt chart for Shortest Remaining Time First (SRTF) scheduling algorithm for the provided data and also

Q8. Explain the Critical Section Problem and discuss two hardware-based solutions to address it.