**Name:**

**Enrolment No:**

MANIPAL UNIVERSITY JAIPUR

**Odd Semester Mid Term Examination, OCT 2024**
**Faculty of Science, School of Basic Sciences**
**Department of Computer Applications**
**BCA III Sem**

**Course Code: CA2106** **Course: Operating System** **Semester: III**

**Time: 1.5 hrs.** **Max. Marks: 30**

**Instructions: All questions are compulsory.**
**Missing data, if any, may be assumed suitably.**
**Calculator is not allowed.**

## SECTION A

| | | Marks | CO |
|---|---|---|---|
| Q A1 | Illustrate using diagram different states of a process. | 2 | **CO1** |
| Q A2 | Why is cache used in a computer system? Illustrate using a hierarchical diagram various types of memories used in a system. | 2 | **CO1** |
| Q A3 | List out and explain any four features of Operating System. | 2 | **CO1** |

## SECTION B

| | | | |
|---|---|---|---|
| Q B1 | How is inter process communication done by the Operating System? Explain both message passing and shared memory models with example. | 4 | **CO2** |
| Q B2 | What do you mean by Preemptive and Non-Preemptive Scheduling? Differentiate between Preemptive and Non-Preemptive Scheduling algorithms with the help of a suitable example for each. | 4 | **CO2** |
| Q B3 | What are the criteria to be considered while designing a scheduling algorithm? | 4 | **CO2** |
| Q B4 | What do you mean by critical section problem? Define using suitable example. | 4 | **CO3** |

## SECTION-C

Q C1 Consider the following set of processes, with length of the CPU burst given in milli second. 6+2 **CO2**

| Process | Burst time | Priority |
|---|---|---|
| $P_1$ | 12 | 3 |
| $P_2$ | 3 | 1 |
| $P_3$ | 4 | 3 |
| $P_4$ | 3 | 4 |
| $P_5$ | 7 | 2 |

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time zero.

(i ) Draw 4 Gantt charts that illustrate the execution of these process using the : FCFS, SJF, priority(smaller priority number implies a higher priority) and Round-Robin( quantum =1). Also calculate turnaround time and waiting time for each process for every scheduling mentioned.