Number of printed pages :02

Semester IV (B. Tech)

Er. No. 21183553

Academic Year: 2022-23

Jaypee University of Engineering & Technology, Guna

T-1(Even Semester 2023)

18B11CI413 – OPERATING SYSTEMS

Maximum Duration: 1 Hour

Maximum Marks: 15

Notes:

1. This question paper has THREE questions.
2. Write relevant answers only.
3. Do not write anything on question paper (Except your Er. No.).

		Marks	CO No.
Q1.	Draw the process state transition diagram and explain the following situation: Consider two processes running, each of which uses the CPU. The first process issues an I/O after running for some time.	[05]	CO2

Q2. The following processes are being scheduled using a preemptive-priority-based-round-robin scheduling algorithm. **CO3**

Process	Burst Time	Arrival Time	Priority
P_1	8	0	0
P_2	3	5	5
P_3	4	6	20
P_4	4	7	20
P_5	5	9	22

Each process is assigned a numerical priority, with a lower number indicating a higher relative priority. The scheduler will execute the highest priority process. For processes with the same priority, a round-robin scheduler will be used with a time quantum of 2 units, otherwise default time slice is 5ms. If a process is preempted by a higher-priority process, the preempted process is placed at the first of the queue.

(a) Show the scheduling order of the processes using a Gantt chart. **[02]**

(b) What is the turnaround time for each process? **[01]**

(c) What is the average waiting time.? **[01]**

(d) What is the response time for each process? **[01]**

The following processes are being scheduled using a Completely Fair Scheduler algorithm. CO3

Process	Burst Time	Priority	Weight
P_1	13	0	1024
P_2	18	-5	3121
P_3	22	-4	2501
P_4	23	-2	1586
P_5	25	-3	1991

Each process priority and weight value are given in above table.

(a) Calculate the time slice of each process. **[01]**

(b) Show the scheduling order of the processes using a Gantt chart. **[02]**

(c) What is the turnaround time for each process? **[01]**

(d) What is the average waiting time.? **[01]**