

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

CLASS: B.TECH.
BRANCH: ALL (MINOR)

SEMESTER: V
SESSION: MO/2022

SUBJECT: CS303 OPERATING SYSTEM

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
2. Candidates attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q1	(a) What are the three main purposes of an operating System?	[2]	CO1	1
Q1	(b) List the basic services provided by operating system.	[3]	CO1	1
Q2	(a) Explain process states with diagram.	[2]	C02	1
Q2	(b) Differentiate between user level and kernel level thread.	[3]	C02	2
Q3	(a) Explain the difference between pre-emptive and non pre-emptive scheduling.	[2]	C02	1
Q3	(b) Describe the difference between long term, short term and medium-term scheduler?	[3]	C02	2

Consider the following set of processes with length of CPU burst time given in milliseconds and arrival time is given for each process. **(Higher number represents higher priority).**

Process	Arrival Time	Burst Time	Priority
P1	0	4	2
P2	1	3	3
P3	2	1	4
P4	3	5	5
P5	4	2	5

Q4	(a) Draw the Gantt. Chart, illustrating the execution of these processes using Non-preemptive and Preemptive Priority Scheduling algorithm.	[2]	CO2	3
Q4	(b) Calculate the average turnaround time and waiting time of each process for each of the scheduling algorithm as mention in (a).	[3]	CO2	3

Consider the following set of periodic processes.

Process	Time Period (ms)	Service Time (ms)
P1	10	3
P2	15	5
P3	30	9

Q5	(a) Draw the scheduling chart for Rate Monotonic Scheduling algorithm for the above set of processes.	[2]	CO2	3
Q5	(b) Explain the following terms related to Inter Process Communication- a) Race condition b) critical section c) Mutual exclusion d) Semaphores	[3]	CO3	1