BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2024)

CLASS: BTech **SEMESTER : V/ADD**
BRANCH: AIML **SESSION : MO/2024**

SUBJECT: CS239 OPERATING SYSTEM

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Specify the objectives of an operating system design.	[2]	1	1
Q.1(b)	Briefly explain different services provided by the operating system.	[3]	1	2
Q.2(a)	Differentiate between Batch Multiprogramming and Time-Sharing system.	[2]	1	4
Q.2(b)	Specify the components of a process. How is the execution context of a process used by the operating system? Explain.	[3]	2	1,2
Q.3(a)	Explain the general structure of the operating system control tables.	[2]	1	2
Q.3(b)	Illustrate the process state transition model with suspend states. Also specify possible transitions.	[3]		2
Q.4(a)	Specify key benefits of threads. Also briefly explain different types of threads with suitable diagrams.	[2]	2	1,2
Q.4(b)	Explain different types of scheduling with queueing diagram.	[3]	2	2
Q.5(a)	List and briefly define five different categories of synchronization granularity in context with parallelism.	[2]	2	1
Q.5(b)	Briefly define Shortest Remaining Time (SRT) scheduling policy. Consider the following scenario of processes:	[3]	2	1,3

Process	Arrival Time	Execution Time
P1	0	9
P2	1	5
P3	2	3
P4	3	4

Draw the Gantt Chart for the execution of processes, showing their start time and end time, using SRT scheduling. Calculate turnaround time, normalized turnaround time, waiting time for each process and average turnaround time average normalized turnaround time, and average waiting time for the system.

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