ROLL NO.

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JSSACADEMYOFTECHNICALEDUCATION,NOIDA
DEPARTMENTOFINFORMATION TECHNOLOGY
CIA-I[Even Semester-(AY2024-25]

Course	: B.Tech	Date	: 01/05/2025
Semester	: IV[th]	SubjectCode	: BCS401
Subject	: Operating System	Max. Marks	: 20
Time	: 1 hrs=60min		

	COURSEOUTCOMES	BL/KC*
CO1	Understand the structure and functions of OS	K1,K2
CO2	Learn about Processes, Threads and Scheduling algorithms.	K1,K2
CO3	Understand the principles of concurrency and Deadlocks	K2
CO4	Learn various memory management scheme	K2
CO5	Study I/O management and File systems.	K4

Section-A

Attempt all the questions of this section **(1X5=5)**

Q.		Question	Marks	CO	BL/KC*
1.	a	Define a batch processing system.	1	CO1	K1
	b	Define the monolithic System architecture.	1	CO1	K1
	c	What distinguishes a Real-Time Operating System from other types of operating systems?	1	CO1	K1
	d	Write the principal advantages of multiprogramming.	1	CO1	K1
	e	Define the term busy waiting	1	CO2	K1

Section-B

Attemptallthequestionsofthissection **(3X3=9)**

2.	List and explain five essential services provided by an operating system. OR Compare and contrast Monolithic and Microkernel architectures in terms of Performance, Reliability, Ease of Extensibility	3	CO1	K2
3.	How does a multiuser operating system differ from a multiprocessing system? OR Explain the structure and components of an operating system with a layered architecture?	3	CO1	K2
4.	Differentiate between: Long-term scheduler (Job Scheduler) and Short-term scheduler (CPU Scheduler) OR Define process and process control block. Also, describe the process state transition diagram in detail.	3	CO2	K2

Section-C

Attemptallthequestionsofthissection **(6X1=6)**

5.	Consider the following set of 6 processes with their arrival times and CPU burst times (in milliseconds). The time quantum for the Round Robin scheduling algorithm is 3 ms. Compute the following: Average Response Time, Average Waiting Time, Average Turnaround Time	6	CO2	K3

Process	Arrival Time	Burst Time
P1	0	8
P2	1	5
P3	2	10
P4	3	2
P5	4	6
P6	5	4

Assume that the scheduling is preemptive and follows a First-Come-First-Served (FCFS) order in case of ties

OR

For the following Processes, draw Gantt chart to illustrate the execution using
(i)Preemptive priority scheduling.
(ii) Non-preemptive priority scheduling.
Also, calculate the Average waiting time and average turnaround time, Average response time
(Assumption: A large priority number has higher priority)

Process	Arrival Time	Burst Time	Priority
A	0	5	4
B	2	4	2
C	2	2	6
D	4	4	3

CO-CourseOutcomegenerallyrefertotraits,knowledge,skillsetthatastudentattainsaftercompletingthecourse successfully.
Bloom'sLevel(BL)-Bloom'staxonomyframeworkisplanninganddesigningofassessmentofstudent's learning.
*KnowledgeCategories(KCs):**F**-Factual,**C**-Conceptual,**P**-Procedural,**M**-Metacognitive