Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech Mid Semester Exam

Semester:4th | **Date: 30/01/2024**
Subject Code: 303105251 | **Time: (1hr: 30min)**
Subject Name: Operating System | **Total Marks: 40**

Sr. No.		Marks
Q.1	**(A) Five One line Questions** 1. Define term. Waiting Time 2. Define term. Turnaround Time 3. What is Throughput? 4. Define preemptive scheduling. 5. What is race condition.	05
	(B) Five Fill in the blanks 1. An operating system is a _____ software that acts as an intermediary between computer hardware and user applications, providing essential services and resource management. 2. _____ full form of BIOS? 3. A process can be terminated due to _____ 4. The state of a process is defined by _____ 5. A process is selected from the _____ queue by the _____ scheduler, to be executed.	05
Q.2	**Attempt any four(Short Questions)** (1) What is system call? Explain steps for system call execution. (2) What is Kernel? Differentiate between Monolithic Kernel and Micro Kernel. (3) Consider the processes P1, P2, P3, P4 with burst time is 21, 3, 6 and 2 respectively, arrives for execution in the same order, with arrival time 0, draw GANTT chart and find the average waiting time using the FCFS and SJF scheduling algorithm. (4) Explain different service provided by operating system. (5) Explain context switching.	12
Q.3	**Attempt any two questions** (1) What is scheduler? Explain queuing diagram representation of process scheduler with figure. (2) What is thread? Explain thread Structure? And explain any one type of thread in details. (3) Write a Shell Script to find factorial of given number.	08
Q.4	**(A)** Consider Five Processes P1 to P5 arrived at same time. They have estimated running time 10, 2, 6, 8 and 4 seconds, respectively. Their Priorities are 3, 2, 5, 4 and 1, respectively with 5 being highest Priority. Find the average turnaround time and average waiting time for Round Robin (quantum time=3) and Priority Scheduling algorithm.	05

(B) Explain process control block (PCB) with diagram. **05**

OR

(B) What Critical section Problem and list the requirements to solve it. Write Peterson's Solution for the same. **05**