Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech (IT)	**Semester/ Section**	4th/ B
Subject Code	PCIT-106	**Subject Title**	Operating System
Mid Semester Exam (MSE) No.	1st	**Course Coordinator**	Pankaj Bhambri
Max. Marks	24	**Time Duration**	09.00AM – 10.30AM
Date of MSE	14th February 2024 (Wednesday)	**University Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Discuss the importance of system calls, processes and threads.	CO1, L2	2
Q2	Appraise and evaluate the significance of Inter Process Communication.	CO1, L5	2
Q3	Distinguish between shell and kernel with two major differences. Analyze the deadlock avoidance and prevention mechanisms alongwith the significance of resource allocation graphs.	CO1, L4	4
Q4	Demonstrate the four criterias required for the process synchronization. How two types of semaphores resolve the issue of process synchronization? Demonstrate through appropriate examples.	CO1, L3	4
Q5	Categories Preemptive and Non-Preemptive Scheduling. There are six processes named as P1, P2, P3, P4, P5 and P6. Their arrival time and burst time are given below in the table. The time quantum of the system is 2 units. Calculate the Average Turn Around Time, Average Waiting Time and Average Response Time using the Round Robin Scheduling.	CO1, L5	4
Q6	a. Compare and contrast the various features, pros/cons and applications of different types of operating systems. b. Classify the operating system services. Evaluate the roles of process control block structure and process states.	CO1, L4 CO1, L4	8

Process	Arrival Time	Burst Time
P_1	0	5
P_2	1	6
P_3	2	3
P_4	3	1
P_5	4	3
P_6	6	4

14.5
10.66
3.33

Course Outcomes (CO)

Students will be able

1	Exemplify various types of Operating Systems, deadlocks, Process, File and Memory management.
2	Implement various deadlock scheduling algorithms.
3	Analyze and apply various memory and file management mechanisms.
4	Classify various page replacement algorithms for demand paging.
5	Use different disk scheduling algorithm for better utilization of external memory.
6	Examine the case studies of different Operating Systems to recapitulate the concepts of Operating System.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating