GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV(NEW) EXAMINATION – WINTER 2022

Subject Code:3140702   **Date:13-12-2022**
Subject Name:Operating System
Time:10:30 AM TO 01:00 PM   **Total Marks:70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Differentiate multiprocessing and multiprogramming operating system.	**03**
	(b)	Write the functions of operating system.	**04**
	(c)	What is process? Explain process control block with all parameters.	**07**
Q.2	**(a)**	Differentiate user level and kernel level thread.	**03**
	(b)	What is scheduling? Explain the types of schedulers.	**04**
	(c)	List out various criteria for good process scheduling algorithms. Illustrate non-preemptive priority scheduling algorithm.	**07**

OR

	(c)	Differentiate process and thread. Explain process state diagram.	**07**
Q.3	**(a)**	Define following terms: (i)Critical section (ii) Mutual exclusion (iii) Bounded waiting	**03**
	(b)	Define deadlock. Describe deadlock prevention in detail.	**04**
	(c)	Illustrate Readers and Writers IPC problem with solution.	**07**

OR

Q.3	**(a)**	Explain Resource allocation graph.	**03**
	(b)	What is deadlock? List the conditions that lead to deadlock.	**04**
	(c)	Explain the Banker's algorithm for deadlock avoidance with an example.	**07**
Q.4	**(a)**	Explain segmentation.	**03**
	(b)	What is external fragmentation? Explain the solution to external fragmentation.	**04**
	(c)	Explain paging hardware with TLB.	**07**

OR

Q.4	**(a)**	Explain address binding.	**03**
	(b)	Explain following allocation algorithm 1) First Fit 2) Best Fit.	**04**
	(c)	What is page fault? Explain steps to handle page fault with diagram.	**07**
Q.5	**(a)**	Discuss the major goals of I/O software.	**03**
	(b)	What is virtualization? Explain the benefits of virtualization.	**04**
	(c)	Draw the block diagram for DMA. Write steps for DMA data transfer.	**07**

OR

Q.5	**(a)**	Differentiate block and character devices.	**03**
	(b)	Explain following Unix command: grep, sort, chmod, mkdir.	**04**
	(c)	Write short note on RAID levels.	**07**

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