Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2021

Subject Code:3141601   **Date:03/09/2021**
Subject Name:Operating System and Virtualization
Time:02:30 PM TO 05:00 PM   **Total Marks:**
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)**	Define following Terms: Mutual Exclusion ,Thrashing , Thread	**03**
	(b)	Explain the features of Time sharing system.	**04**
	(c)	What is operating system? Give the view of OS as a resource manager.	**07**
Q.2	**(a)**	Explain the following UNIX Commands (a) grep (b) chmod (c) finger	**03**
	(b)	Draw process state diagram. Explain each transition among them in detail.	**04**
	(c)	What is thread? Explain thread Structure? And explain any one type of thread in details.	**07**
		OR	
	(c)	What is PCB? Discuss its major fields.	**07**
Q.3	**(a)**	List the four events that cause processes to be created. Explain each in brief.	**03**
	(b)	What is interrupt? How it is handle by operating system.	**04**
	(c)	Explain producer consumer problem and its solution using monitor.	**07**
		OR	
Q.3	**(a)**	Write a short note on semaphores.	**03**
	(b)	Discuss Demand paging in detail.	**04**
	(c)	Explain producer-consumer problem and solve it using semaphore. Write pseudo code for the same	**07**
Q.4	**(a)**	List Deadlock recovery techniques and explain any one of them.	**03**
	(b)	Write a short note on Critical Section.	**04**
	(c)	Differentiate between preemptive and non-preemptive scheduling. Solve following by SJF preemptive and non-preemptive. Draw Gantt Chart, Average Waiting Time and Average Turnaround Time. Which one is better as per average turnaround time?	**07**

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

OR

Q.4 **(a)** Explain context switching. **03**

(b) Explain Bankers' algorithm to avoid deadlock. **04**

(c) Consider the reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. the number of frames in the memory is 3. Find out the number of page faults respective to: **07**
1. Optimal Page Replacement Algorithm
2. FIFO Page Replacement Algorithm

LRU Page Replacement Algorithm

Q.5 **(a)** What is called segmentation? How it differs from paging? **03**

(b) What are the inherent benefits of the Virtualization? **04**

(c) Consider the following disk request sequence for a disk with 100 tracks 45, 21, 67, 90, 4, 50, 89, 52, 61, 87, 25. Head pointer starting at 50 and moving in left direction. Calculate head movement for the following algorithms. **07**
1. FCFS 2. SSTF

OR

Q.5 **(a)** Explain Linux kernel and its functions. **03**

(b) Write a shell script which displays the content of all files given as command line arguments with appropriate heading. It should also give the name of file which are not readable. **04**

(c) Explain ESX server and also write the differences between ESX server and VMware server. **07**

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