Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – WINTER 2017

Subject Code: 2140702 **Date: 24/11/2017**

Subject Name: Operating System

Time: 02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	(a)	Write Various Process State.	03
	(b)	Explain Storage Structure.	04
	(c)	Write Different Types of System calls.	07
Q.2	(a)	Write about Schedulers.	03
	(b)	Explain Queueing-diagram representation of process scheduling.	04
	(c)	Write various multithreading models.	07
		OR	
	(c)	Write about Resource allocation graph.	07
Q.3	(a)	Discuss preemptive scheduling.	03
	(b)	Write benefits of threads.	04
	(c)	Explain Shortest-Job-First, Round-Robin and Priority CPU Scheduling algorithm with proper example.	07
		OR	
Q.3	(a)	Write about Semaphores.	03
	(b)	Write various Scheduling criteria.	04
	(c)	Explain Dining-philosophers Solution Using Monitors.	07
Q.4	(a)	Discuss Swapping.	03
	(b)	Discuss Demand Paging.	04
	(c)	Write Various Deadlock Prevention Techniques.	07
		OR	
Q.4	(a)	Explain Fragmentation.	03
	(b)	Write about Indexed allocation method.	04
	(c)	Write Second Chance LRU approximation page replacement algorithm in detail. Also write enhanced LRU approximation algorithm.	07
Q.5	(a)	Discuss various file attributes.	03
	(b)	Write about acyclic graph directories.	04
	(c)	Consider the following page reference string:	07

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

How many page faults would occur for following page replacement algorithm, considering 3 frames and 4 frames.

i) FIFO
ii) LRU
iii) Optimal

OR

Q.5 **(a)** Discuss various file operations in brief. **03**

(b) How Free space can be managed by OS? **04**

(c) Suppose that a disk drive has 200 cylinders. Numbered 0 to 199. The drive is currently serving at cylinder 53 and previous request was at cylinder 43. The queue of pending requests in FIFO order is **07**

98, 183, 37, 122, 14, 124, 65, 67

Starting from the current head position what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of following disk scheduling algorithms.

a) FCFS
b) SSTF
c) SCAN
d) LOOK
e) C-SCAN
f) C-LOOK

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