Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA Integrated- SEMESTER– IV EXAMINATION – WINTER 2019

Subject Code: 4440603   **Date:30/11/2019**
Subject Name: Operating Systems
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.**

Q.1	**(a)**	Define the term.	**07**
		1. Dispatcher.	
		2. Thrashing.	
		3. Operating system.	
		4. Scheduling.	
		5. Cache memory.	
		6. Turnaround time.	
		7. Middleware.	
	(b)	Do as directed.	**07**
		1. What is kernel?	
		2. List any 2 reasons for process creation.	
		3. Process is a subset of a thread.(TRUE/FALSE).	
		4. What is atomic operation?	
		5. The size of all the pages within a process is not same.(TRUE/FALSE).	
		6. List all OS control tables.	
		7. What is seek time for disk scheduling?	

Q.2	**(a)**	What is process? Explain 5 state process model with diagram.	**07**
	(b)	What is semaphore? Explain primitives of 2 types of semaphore.	**07**

OR

	(b)	What is memory partition? Explain dynamic memory partitioning technique with diagram.	**07**

Q.3	**(a)**	Explain different classes of client server architecture. Also explain three tier architecture in detail.	**07**
	(b)	What is page replacement? Explain FIFO and LRU page replacement policy for the following page stream. The page address stream is as below 2 3 2 1 5 2 4 5 3 2 5 2	**07**

OR

Q.3	**(a)**	Define the term Deadlock. Discuss the necessary and sufficient conditions for a Deadlock to occur. State the general approaches to deal with Deadlock situation.	**07**
	(b)	What is TLB? Explain paging with TLB with flowchart.	**07**

Q.4	**(a)**	What is process scheduling? Explain HRRN and Shortest process next policy. Process scheduling example	**07**

Process	Arrival time	Service time
A	0	3
B	2	6
C	4	4
D	6	5
E	8	2

	(b)	What is Monitor? Explain the solution to the Bounded-Buffer Producer/Consumer Problem using a Monitor	**07**

OR

Q.4	**(a)**	Explain the buddy system with proper example	**07**
	(b)	What is I/O Communication? Explain I/O Communication Techniques in detail.	**07**

Q.5	**(a)**	What is file? Explain different type of file organization technique in detail.	**07**
	(b)	Explain RAID and its level 0-6 in detail.	**07**

OR

Q.5	**(a)**	What is paging? Explain address translation in paging with diagram.	**07**
	(b)	What is Cluster? Explain different clustering methods in detail.	**07**

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