Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV(OLD) – EXAMINATION – SUMMER 2019

Subject Code:140702   **Date:20/05/2019**
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.

Q.1	**(a)**	Define operating system. Explain the different views of operating system. Also explain types of operating system.	**07**
	(b)	What is PCB? Discuss its major fields.	**07**
Q.2	**(a)**	Explain process states model with diagram.	**07**
	(b)	What is RAID? Explain in brief	**07**
		OR	
	(b)	Explain IPC Problem – Readers & Writers Problem.	**07**
Q.3	**(a)**	What is Semaphore? Explain its properties along with drawbacks. Explain bounded buffer problem and solve it by Semaphore.	**07**
	(b)	Consider the following five processes with the length of the CPU burst time in milliseconds.	**07**

Process Burst Time Priority
P1   10   3
P2   1   1
P3   2   3
P4   1   4
P5   5   2

Processes are Assumed to have arrived at time 0.
For the above set of processes find the average waiting time and average around time for each of the following scheduling algorithm using Ganttchart. Consider 1 is highest priority
1. SJF 2. Non preemptive Priority 3. RR (Q = 2)

OR

Q.3	**(a)**	Explain banker's algorithm for multiple resource with example.	**07**
	(b)	For the following page reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 Calculate the page faults applying the following Page Replacement Algorithms for a memory with three frames: (I) Optimal (II) LRU (III) FIFO	**07**
Q.4	**(a)**	Write a short note on DMA.	**07**
	(b)	Suppose Disk drive has 300 cylinders. The current position of head is 90. The queue of pending request is 36,79,15,120,199,270,89,170 Calculate head movement for the following algorithms. 1. FCFS 2. SSTF	**07**
		OR	
Q.4	**(a)**	List the different file implementation methods and explain them in detail.	**07**
	(b)	Explain paging with example.	**07**
Q.5	**(a)**	Explain all Accessing Methods of File.	**07**
	(b)	What is Mutex? Write a pseudo code to achieve mutual exclusion using mutex.	**07**

OR

Q.5 **(a)** Define following terms. **07**
1. Throughput
2. Waiting Time
3. Turnaround Time
4. Response Time
5. Granularity
6. Short Term Scheduler
7. CPU Utilization

(b) Explain Unix Commands: cat, sort, grep, finger, man. **07**

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