Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV EXAMINATION – SUMMER 2020

Subject Code: 2140702 Date:26/10/2020

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.**

			MARKS
Q.1	**(a)**	Define following terms: 1) Starvation 2) Process 3) Mutual Exclusion	**03**
	(b)	Explain the different types of operating system.	**04**
	(c)	Explain PCB with all parameters in details.	**07**
Q.2	**(a)**	Explain different services provided by operating system.	**03**
	(b)	Differentiate between process and thread.	**04**
	(c)	Explain the IPC Problem known as Dining Philosopher Problem.	**07**
		OR	
	(c)	Explain IPC Problem – Readers & Writers Problem.	**07**
Q.3	**(a)**	Discuss in brief different types of scheduler.	**03**
	(b)	What is deadlock? Define necessary conditions that lead to deadlock.	**04**
	(c)	Assume you have following jobs to execute with one processor. Apply shortest job first with preemptive scheduling algorithm.	**07**

Process	Burst time	Arrival Time
0	8	0
1	4	1
2	9	2
3	5	3

a. Draw Gantt chart for process execution.
b. What is the average turnaround time?
c. What is the average wait time?

OR

Q.3	**(a)**	List parameters to be considered while selecting scheduling algorithms.	**03**
	(b)	What is semaphore? Describe types of semaphore.	**04**
	(c)	Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with illustration.	**07**
Q.4	**(a)**	Differentiate between preemptive and non preemptive scheduling algorithm.	**03**
	(b)	Define deadlock. Describe deadlock prevention in detail.	**04**
	(c)	Write short note: RAID levels.	**07**

OR

Q.4	**(a)**	Explain file attributes in detail.	**03**
	(b)	Explain the following UNIX commands 1. Grep 2. Chmod	**04**
	(c)	What is Paging? Explain paging mechanism in MMU with example.	**07**
Q.5	**(a)**	What is thrashing? Explain it with respect to degree of multiprogramming.	**03**
	(b)	Define fragmentation. Describe types of fragmentation.	**04**
	(c)	Explain continuous memory allocation algorithms: 1) First-fit 2) Best-fit 3) Worst-fit	**07**

OR

Q.5	**(a)**	Describe any one page replacement algorithm.	**03**
	(b)	Explain working set model.	**04**
	(c)	Explain any two File Allocation Methods from the following: (i) Contiguous Allocation (ii) Linked Allocation (iii) Indexed Allocation	**07**

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