Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2015

Subject Code: 2140702 **Date:03/06/2015**

Subject Name: Operating System

Time: 10:30am-1.00pm **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)	Explain evolution of operating system in detail with suitable diagrams.	**07**
Q.2	**(a)**	(i) Define process. Differentiate between a process and a program.	**04**
		(ii) Explain different states of a process with a suitable diagram.	**03**
	(b)	Explain threads in brief with its types. What is multithreading? Explain.	**07**
		OR	
	(b)	Define mutual exclusion. How mutual exclusion can be achieved? Explain.	**07**
Q.3	**(a)**	Explain the IPC Problem known as Dining Philosopher Problem.	**07**
	(b)	Explain Context Switching. Discuss performance evaluation of FCFS (First Come First Serve) & RR (Round Robin) scheduling.	**07**
		OR	
Q.3	**(a)**	What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented?	**07**
	(b)	Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with illustration.	**07**
Q.4	**(a)**	Explain the following in detail with suitable diagrams: (i) Swapping (ii) Segmentation. (iii) Multiprogramming with fixed partitions (iv) Multiprogramming with Variable Partitions.	**14**
		OR	
Q.4	**(a)**	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**
	(b)	Explain the goals of I/O software.	**07**
Q.5	**(a)**	Explain any three Disk Arm Scheduling algorithms with suitable illustrations.	**07**
	(b)	Explain the goals of Operating System Security.	**07**
		OR	
Q.5	**(a)**	Explain any two File Allocation Methods from the following: (i) Contiguous Allocation (ii) Linked Allocation (iii) Indexed Allocation	**07**
	(b)	Explain Linux kernel and its functions in brief.	**07**

****