Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-IV Examination-Nov/Dec-2011

Subject code: 140702 **Date: 30/11/2011**

Subject Name: Operating System

Time: 02.30 pm -5.00 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 Answer the following(Any Seven) **14**

(i)Give the difference between a Process and a Program.
(ii) Give the features of Batch Operating System.
(iii)Give the role of "Kernel" and "Shell" in UNIX.
(iv)Define: Critical Section, Race Condition.
(v) Give the advantages of Distributed Operating System.
(vi)Define: Waiting Time, Response Time.
(vii)Give the functions of following UNIX commands:
cat, cp, pwd
(viii)What do you mean by Virtual Memory and Physical Memory?

Q.2 **(a)** What is Deadlock? Explain Deadlock Prevention in detail. **07**

(b) Explain the use of Banker's Algorithm for Deadlock Avoidance with illustration. **07**

OR

(b) Compare Optimal, LRU and FIFO page replacement algorithms with illustration. **07**

Q.3 **(a)** What is monitor? Give the implementation of Bounded Buffer Producer-Consumer Problem using monitor. **07**

(b) Five jobs A through E arrive at a computer center with following details **07**

Job	Arrival Time	CPU Time
A	0	9
B	1	5
C	2	2
D	3	6
E	4	8

Calculate the Turnaround Time and Waiting Time for all processes applying (i) First Come First Serve (ii) Shortest Job First and (iii) Round Robin (with Time Quanta=3) algorithms.

OR

Q.3 **(a)** What is Semaphore? Give the implementation of Readers-Writers Problem using Semaphore. **08**

(b) Explain any Three Disk Arm Scheduling Algorithms with illustration. **06**

Q.4 **(a)** Compare Paging and Segmentation. Explain the combined Paged Segmentation Concept with illustration. **07**

	(b)	Explain the following. (i) Contiguous and Linked List Allocation for implementing File System. (ii) Use of "inode" in UNIX File System.	**07**
		OR	
Q.4	**(a)**	Explain Files and Directory Management in UNIX Operating System.	**07**
	(b)	Explain the following. (i)Memory Management with Linked List and Bitmap. (ii)Direct Memory Access.	**07**
Q.5	**(a)**	Write short notes on following: (i)Design Principles of Security. (ii)Real Time Operating System.	**07**
	(b)	What are the use of device driver & controller in OS? Explain.	**07**
		OR	
Q.5	**(a)**	Explain UMA and NUMA multiprocessors.	**07**
	(b)	Write short notes on following: (i)Multithreading and Multitasking. (ii)Access Control List.	**07**

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