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**

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(b) Explain the following.   **07**
(i) Contiguous and Linked List Allocation for implementing File System.
(ii) Use of "inode" in UNIX File System.

<div align="center">OR</div>

Q.4 **(a)** Explain Files and Directory Management in UNIX Operating System.   **07**
     (b) Explain the following.   **07**
(i)Memory Management with Linked List and Bitmap.
(ii)Direct Memory Access.

Q.5 **(a)** Write short notes on following: **07**
(i)Design Principles of Security.
(ii)Real Time Operating System.
     (b) What are the use of device driver & controller in OS? Explain.   **07**

<div align="center">OR</div>

Q.5 **(a)** Explain UMA and NUMA multiprocessors.   **07**
     (b) Write short notes on following: **07**
(i)Multithreading and Multitasking.
(ii)Access Control List.

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