

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 140702****Subject Name: OPERATING SYSTEM****Date: 18 / 06 /2010****Time: 10.30 am – 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.

- Q.1** Answer the following (*Any Seven*) **14**
- (i) What is Operating System? Give the view of OS as Resource Manager.
 - (ii) Define: Mutual Exclusion, Thrashing.
 - (iii) Give the function of “Shell” in Unix Operating System.
 - (iv) Define: Turnaround Time, Response Time.
 - (v) What is Process ? Give the difference between a process and a program.
 - (vi) What is Virtual Memory? Explain.
 - (vii) Explain the features of Time Sharing System.
 - (viii) Explain the features of Real Time Operating System.
- Q.2** (a) What is Process State? Explain different states of a process with various queues generated at each stage. **07**
- (b) What is Semaphore? Give the implementation of Bounded Buffer Producer Consumer Problem using Semaphore. **07**
- OR**
- (b) What is advantage of using Monitor? Give the implementation of Bounded Buffer Producer Consumer Problem using “Monitor”. **07**
- Q.3** (a) Compare Multiprogramming with Fixed Partition and Multiprogramming with Variable Partitions with diagram. **07**
- (b) What do you mean by Deadlock Avoidance? Explain the use of Banker’s Algorithm for Deadlock Avoidance with illustration. **07**
- OR**
- Q.3** (a) What is Paging? What is Page Table? Explain the conversion of Virtual Address to Physical Address in Paging with example. **07**
- (b) What is Deadlock? List the conditions that lead to deadlock. How Deadlock can be prevented? **07**
- Q.4** (a) Explain the concept of Segmentation for Memory Management. Explain why combined Paged Segmentation is used with illustration. **06**
- (b) Answer the following: **08**
- (i) Explain Round Robin, Shortest Job First and Priority Scheduling Algorithms with illustration.
 - (ii) Explain Goals of I/O Software.
- OR**
- Q.4** (a) What is “inode”? Explain File and Directory Management of Unix Operating System. **07**

(b) For the Page Reference String: 07

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 (i) Optimal (ii) LRU and (iii) FIFO Page Replacement Algorithms for a Memory with three frames.

Q.5 (a) Explain Protection Mechanism illustrating use of Protection Domain and Access Control List. 06

(b) Write short notes on following 08

(i) Contiguous Allocation and Linked List Allocation for File System Implementation.

(ii) File Types and File Access(sequential access and random access).

OR

Q.5 (a) Explain various Disk Arm Scheduling Algorithms with illustration. 05

(b) Write short notes on following 09

(i) Device Controller

(ii) Direct Memory Access (DMA).

(iii) Unix Commands: cat, sort, grep.

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