

**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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