Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: 140702 Date: 31-12-2014

Subject Name: Operating System

Time: 02:30 pm - 05:00 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 **(a)** Explain basic services provided by Operating System on bare Hardware machine. **07**

(b) What is Virtual Machine? Explain virtual machine & Client/Server architecture of Operating System. **07**

Q.2 **(a)** What is the average waiting time & average Turn around times of all processes for FCFS, SJF, non-preemptive Priority and Round Robin(Quantum=1) scheduling: **07**

Porcess	BurstTime	Priority
P1	8	5
P2	1	1
P3	3	2
P4	2	4
P5	5	3

(Assume Small number implies higher priority & All 5 processes have arrived in order P1,P2,P3,P4,P5 all at time=0)

(b) What is Process? Explain Process State Transition Diagram in detail. **07**

OR

(b) What is System Call in OS? Explain fork() system call to create new process in UNIX OS. **07**

Q.3 **(a)** What is IPC? Explain the use of Semaphore to solve Producer-Consumer problem. **07**

(b) Consider the following Page reference string: **07**
0,1,7,2,3,2,7,1,0,3. How many page faults occur with four page frames and eight pages and the four frames are initially empty in case of FIFO & LRU.

OR

Q.3 **(a)** What is Monitor in IPC ? Solve the Bounded buffer problem using Monitor. **07**

(b) What is a Deadlock? Describe the conditions that lead to deadlock. How to recover from Deadlock? **07**

Q.4 **(a)** Explain virtual memory management with Paging in detail. **07**

(b) Explain Banker's Algorithm to avoid deadlock with multiple resources. **07**

OR

Q.4 **(a)** Explain following commands in UNIX: **07**
1. chmod 2. grep 3. head & tail 4. Cut

(b) Explain How DMA (Direct Memory Access) works. **07**

Q.5 **(a)** Explain linked list allocation file implementation technique. **07**

(b) Discuss various security threats in File System of OS. **07**

OR

Q.5 **(a)** Compare various Disk Arm Scheduling Algorithms. **07**

(b) Compare Windows & Unix family Operating Systems. **07**

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