

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**

Process	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: 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. **07**

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**
