Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 140702 **Date: 29/12/2012**

Subject Name: Operating System

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Differentiate Multi-Programming, Multi-tasking ,Multiprocessing & Distributed Operating System. **07**

(b) Explain Client/Server & Virtual Machine Architecture of Operating System **07**

Q.2 **(a)** Explain following in Brief: **07**

I. Kernel
II. System Call
III. Inode

(b) What is Semaphore? Solve producer consumer problem with use of semaphore. **07**

OR

(b) Explain Following commands in UNIX/LINUX OS. **07**

I. chmod
II. head & tail
III. cut

Q.3 **(a)** Consider the Following set of Processes , with the length of the CPU-burst time given in milliseconds: **07**

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time=0.

a. Draw Four Gantt charts illustrating the execution of these processes using FCFS, SJF, non-preemptive Priority (a small priority number implies a higher priority) , and Round Robin (quantum =1) scheduling.

b. What is the average waiting time of all processes for each of the scheduling algorithms in part a ?

c. What is the average Turn around time of all processes for each of the scheduling algorithms in part a ?

	(b)	Explain following in brief: I Device Driver II Interrupt Service Routine III Thread	**07**
		OR	
Q.3	**(a)**	Write following Shell scripts in Unix/Linux : I. To find five largest files in the current directory. II. To find Sum & Average of 'n' numbers	**07**
	(b)	Write C Program to create exactly four child processes on UNIX / LINUX & assign each a unique task of addition , subtraction, multiplication, Division.	**07**
Q.4	**(a)**	Explain Virtual Memory Management with Paging in Detail	**07**
	(b)	What is Dead lock ? When it occurs? How to recover from it.	**07**
		OR	
Q.4	**(a)**	Explain Banker's Algorithm for Multiple Resources.	**07**
Q.4	**(b)**	Explain various Page Replacement Algorithms with example.	**07**
Q.5	**(a)**	Explain Implementation of File in Operating System.	**07**
	(b)	Explain Swapping in Detail.	**07**
		OR	
Q.5	**(a)**	Explain following in brief: I. File system consistency. II. Elevator Algorithm	**07**
	(b)	Explain Device Independent I/O software.	**07**

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