Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA SEM-III Examination- Dec.-2011

Subject code: 630004 **Date: 19/12/2011**
Subject Name: Operating Systems (OS)
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)** Describe FCFS, RR, SPN, SRT, HRRN, Feedback and Fair-share scheduling methods briefly. Given the following data, calculate Turnaround Time for each process and average Turnaround for all processes using FCFS, SPN and SRT algorithms. **07**

Process	**A**	**B**	**C**	**D**	**E**
Arrival Time	0	2	4	6	8
Service Time	3	6	4	5	2

(b) Discuss the five state process model. Explain also various queues developed for different state. What do you mean by spanned state? **07**

Q.2 **(a)** What is process? Describe the elements of PCB in details. **07**
(b) What is semaphore? Give and explain the algorithm of producer/consumer problem with bounded using general semaphore. **07**

OR

(b) Describe the necessary condition for deadlock occurrence. Discuss the deadlock avoidance using Banker's algorithm. Also discuss data structure for implementing this algorithm **07**

Q.3 **(a)** Illustrate the changes that occur in the stack, program counter, and stack pointer for handling an interrupt. **07**
(b) Discuss the use of Invert Page Table in paging technique. How physical address is generated in it? **07**

OR

Q.3 **(a)** Define cache memory. Explain the design aspect of cache memory. **07**
(b) Explain the buddy system with proper example. **07**

Q.4 **(a)** What do you mean by File Allocation with respect to Secondary Storage Management? Discuss Chained and Indexed allocation for file? **07**
(b) Write short notes on following: **07**
(i) RAID
(ii) Clustering
(iii) Security Threats

OR

Q.4 **(a)** Explain the file and directory management of UNIX. **07**
(b) Explain the Disk Scheduling algorithms with illustration. **07**

Q.5	**(a)**	(i)	Explain briefly the three techniques for performing I/O.	**03**
		(ii)	What are typical operations that may be performed on a directory?	**04**
	(b)	(i)	Indicate various types of threats to security of computer systems and networks.	**04**
		(ii)	Suggest relative pros and cons of fat client and thin client strategies.	**03**

OR

Q.5	**(a)**	Write short notes on following:		**07**
		(i)	Remote Procedure Call	
		(ii)	Intrusion detection.	
	(b)	(i)	Briefly explain the four general approaches for thread scheduling.	**04**
		(ii)	What is difference between passive and active security threats?	**03**

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