Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– • EXAMINATION – WINTER 2014

Subject Code: 3715302 Date:07/01/2015

Subject Name: OS Programming

Time:02:30 pm to 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 the various states of a process with a suitable diagram of process life cycle.	**07**
	(b)	Explain the significance of context switching. List out the reasons for context switching with brief description.	**07**
Q.2	**(a)**	Write a short note on scheduling in Linux operating system.	**07**
	(b)	Write a short note on fork, waitpid system calls with an example of child process creation.	**07**
		OR	
Q.2	**(a)**	List out the various subsystems of an operating system with brief listing of services under each subsystem.	**07**
	(b)	What are system calls? Explain the flow of invoking and handling a system call in brief.	**07**
Q.3	**(a)**	Explain the problem of race conditions with suitable examples.	**07**
	(b)	What is a semaphore? Explain how semaphores can be used to achieve mutual exclusion with an example.	**07**
		OR	
Q.3	**(a)**	Differentiate between mutex and semaphore? Explain the usage of pthread API for mutex handling.	**07**
	(b)	List out the steps in writing a shell script with an example of checking type of triangle.	**07**
Q.4	**(a)**	Explain the occurrence of a deadlock with a suitable example. Explain any one technique for preventing deadlocks.	**07**
	(b)	What is paging? Explain the flow of logical to physical address mapping with the help of page tables.	**07**
		OR	
Q.4	**(a)**	What is a page fault? Explain the steps in handling a page fault exception in detail.	**07**
	(b)	Explain the following terminology in brief i) fragmentation ii) thrashing iii) demand paging	**07**
Q.5	**(a)**	List out and explain the system calls used for basic file handling.	**07**
	(b)	List out various types of files recognized by an unix/linux based file system with a brief description	**07**
		OR	
Q.5	**(a)**	Explain the significance of an inode in a file system. Write a short note on lstat system call with brief usage.	**07**
	(b)	Explain the usage of named, unnamed pipes in inter process communication.	**07**

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