Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–II • EXAMINATION – SUMMER 2017

Subject Code: 3725208 **Date:01/06/2017**

Subject Name: Device Drivers - I

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)**	Write short notes on OS architecture with the focus on user space and kernel space.	**07**
	(b)	How system calls are invoked from user space? Explain with a suitable example.	**07**
Q.2	**(a)**	Write short notes on process life cycle with a suitable diagram connecting various process states.	**07**
	(b)	List the few system calls used for file handling in Linux environment and explain with a suitable example code.	**07**
		OR	
	(b)	Explain the steps in building a kernel image from sources.	**07**
Q.3	**(a)**	What is a device driver? Differentiate between character drivers and block drivers.	**07**
	(b)	Explain the steps in loading and unloading a simple module with a suitable example.	**07**
		OR	
Q.3	**(a)**	List the APIs used for registering and deregistering a simple character driver in kernel space and explain them with a suitable example.	**07**
	(b)	Write short notes on following utilities. i) dmesg ii) uname iii) modprobe	**07**
Q.4	**(a)**	List the few factors influencing deterministic behavior of a real time operating system (RTOS)?	**07**
	(b)	What is mutual exclusion? Explain the usage of semaphores to achieve mutual exclusion.	**07**
		OR	
Q.4	**(a)**	What are the typical services of a Real Time Operating System?	**07**
	(b)	Write short notes on scheduling algorithms supported in FreeRTOS environment.	**07**
Q.5	**(a)**	What is scheduling latency? Write a skeleton code for measuring scheduling latency in a FreeRTOS task.	**07**
	(b)	Explain the significance of software timer objects in a typical RTOS.	**07**
		OR	
Q.5	**(a)**	What are periodic tasks? Write the skeleton code for a periodic task in a typical RTOS.	**07**
	(b)	Explain the usage of mutex semaphore used for preventing priority inversion problem.	**07**

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