

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-II • EXAMINATION – SUMMER • 2014

Subject Code: 2725208**Date: 25-06-2014****Subject Name: Device Drivers-I****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 the procedure of building custom kernel image from sources. **07**
(b) List out and explain various scheduling algorithms supported by Linux kernel. **07**
- Q.2** (a) What is a system call? **07**
List out few system calls used for process management in linux environment.
(b) Explain the steps in adding system call to kernel space. **07**
- OR**
- (b) Write a short note on memory management in kernel space. **07**
- Q.3** (a) Explain in detail how kfifo can be used for data exchange in kernel space with suitable APIs. **07**
(b) Explain the steps for registering and deregistering a char driver in kernel space with a skeleton code. **07**
- OR**
- Q.3** (a) Write a short note on device special files with the listing of macros related with major, minor numbers. **07**
(b) Explain printk API along with various log levels and their significance. **07**
- Q.4** (a) Write a short note on scheduling jitter and interrupt latency. **07**
(b) What is a semaphore? **07**
Explain semaphore operations in detail with an example from a typical RTOS.
- OR**
- Q.4** (a) List out and explain different types of semaphores supported in a typical RTOS. **07**
(b) Write a short note on configuring FreeRTOS kernel with few examples of configuration options. **07**
- Q.5** (a) What are typical characteristics of a Real Time Operating Systems? **07**
(b) Differentiate between periodic and aperiodic tasks with an example. **07**
- OR**
- Q.5** (a) Explain task management in detail in a typical RTOS like FreeRTOS with listing of significant API. **07**
(b) What is Priority inversion problem? **07**
Explain any one solution to avoid this problem.
