

Code No: 5455AC

R17

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech I Semester Examinations, January - 2018

REAL TIME OPERATING SYSTEMS

(Embedded Systems)

Time: 3hrs

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

5 × 5 Marks = 25

- 1.a) What command is used to check the number of files, disk space and each user's defined quota? [5]
- b) What is RTOS? Explain the different types of RTOS. [5]
- c) Explain the basic I/O concepts. [5]
- d) What is the need of watchdog timer? [5]
- e) Explain the creation and activation of a task by task spawn function in Vx Works. [5]

PART - B

5 × 10 Marks = 50

2. Explain how to achieve communication between a process running in Linux and a process running in RT Linux. [10]

OR

3. Explain file I/O functions "Lseek, open, Read, Write" with an example. [10]

- 4.a) Discuss the RTOS Task scheduling Models.

- b) Why does an OS function provide two modes, user mode and supervisory mode? Briefly explain about those two modes. [5+5]

OR

5. Explain the use of Semaphore and write the program. [10]

6. Describe what are pipes and semaphores. Explain the mechanism of pipes with two-way communication and semaphores of UNIX with your own program. [10]

OR

7. Write the brief notes on:

- a) Event Registers b) Signals. [5+5]

- 8.a) Explain Handling of Interrupt source calls.

- b) Explain the functions of interrupt vector table. [5+5]

OR

9. What is the need of timer in an OS? What are the function calls are provided to manage the timer? [10]

10. Define porting of RT Linux. Discuss general requirements of processor to port RT Linux along with hardware/software architecture. [10]

OR

11. Explain the case study of coding for sending application layer byte stream on a network using RTOS Vx works. TCP/IP [10]