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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech II Semester End Examinations (Regular) - July, 2017

Regulation: IARE-R16

EMBEDDED REAL TIME OPERATING SYSTEMS (Embedded Systems)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

- (a) Write the syntax of lseek function and explain different values of the whence argument. [7M]
(b) Write the program to illustrate the concept of race condition and further write the program to illustrate avoiding race condition. [7M]
- (a) Write a program to create a file with a hole in it. [7M]
(b) Illustrate the relationship among six exec functions. Explain each function in detail. [7M]

UNIT – II

- (a) Explain High-level view of an RTOS, its kernel, and other components found in embedded systems. [7M]
(b) Illustrate the usage of different types of semaphores to address common synchronization design requirements effectively. [7M]
- (a) Explain different types of scheduling algorithms. [7M]
(b) Illustrate a typical Finite State Machine for task execution states, with brief descriptions of state transitions. [7M]

UNIT – III

- (a) Explain different Steps must take place to accomplish uniform I/O operations at the application-level. [7M]
(b) Illustrate the process of servicing a write operation for a block-mode device. [7M]
- (a) Describe the relationship between the I/O API set and driver internal function set. [7M]
(b) Explain memory-mapped I/O device address space with the help of diagram. [7M]

UNIT – IV

7. (a) Illustrates a general priority framework observed in most embedded computing architectures. [7M]
(b) Explain different steps in servicing the timer interrupt. [7M]
8. (a) What is a spurious interrupt ? Explain different types of triggering mechanisms to raise interrupts to the core processor. [7M]
(b) List the issues are associated with the timing wheel approach and discuss the solutions for the same. [7M]

UNIT – V

9. (a) What is RT linux and list the functionalities of RT linux? [7M]
(b) List and briefly discuss the features of the system user of $\mu C/OS-II$ to control the tasks. [7M]
10. (a) What is V_x works and list the functionalities of V_x works? [7M]
(b) Explain different components in software stack of different layers in android architecture. [7M]

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