Code No: **R42049** **R10** **Set No. 1**

**IV B.Tech II Semester Regular/Supplementary Examinations, April – 2015**

# REAL TIME OPERATING SYSTEMS

**(Common to Electronics & Communication Engineering, Electronics & Instrumentation Engineering and Electronics & Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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| | | | |
|---|---|---|---|
| 1 | a) | Write the basic design principles when using an RTOS to design an embedded system. | [8] |
| | b) | Explain the Security Issues in OS? | [7] |
| 2 | a) | Define and briefly explain the following related to RTOS. i) Message queues ii) Event registers iii) Pipes | [8] |
| | b) | Write the functioning of clocks and Timers in Vx works. | [7] |
| 3 | a) | Bring out the differences in the functioning of linux and Vx works. | [8] |
| | b) | What is binary semaphore? With an example explain how to use binary semaphores for signalling or notifying occurrences of an event from a task or thread and for signalling or notifying another task waiting for that event. | [7] |
| 4 | a) | What are the basic features of MucosRTOS. Explain | [8] |
| | b) | Write a case study of coding for sending application layer byte streams on a TCP/IP Network Using RTOS Vx Works. | [7] |
| 5 | a) | What are the features required in the designing of Embedded System for an Adaptive Cruise Control System in Car. | [8] |
| | b) | Explain the procedure in developing programming model for a smart card in detail. | [7] |
| 6 | a) | Discuss the working of Off-The-Shelf Operating System Software. | [8] |
| | b) | Explain the process of Porting RTOS on a Micro Controller based Development Board. | [7] |
| 7 | a) | Give an Overview and programming concepts of Unix Programming, | [8] |
| | b) | Write the concepts of shell programming. | [7] |
| 8 | a) | Write a Program to display a message periodically using semaphore. | [8] |
| | b) | How does Mutex Manages messages? Explain with suitable illustrations. | [7] |

Code No: **R42049** **R10** **Set No. 2**

**IV B.Tech II Semester Regular/Supplementary Examinations, April – 2015**

# REAL TIME OPERATING SYSTEMS

**(Common to Electronics & Communication Engineering, Electronics & Instrumentation Engineering and Electronics & Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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| | | | |
|---|---|---|---|
| 1 | a) | Compare and contrast various methods in inter task communication with relevant examples. | [8] |
| | b) | Explain the memory management that is required in RTOS. | [7] |
| 2 | a) | How is the Latency and Response of the Tasks used as Performance Metrics in RTOS? | [8] |
| | b) | Write the variations in details of Mailboxes that can be seen from RTOS to RTOS. | [7] |
| 3 | a) | Discuss the programming concepts in Linux. | [8] |
| | b) | Write about the functional features of RTOS OSEK. | [7] |
| 4 | a) | Explain the digital camera hardware and software architecture. | [8] |
| | b) | Write the design steps for sending application layer byte streams on a TCP/IP Network Using RTOS Vx Works. | [7] |
| 5 | a) | Write about the embedded system design process for a smart card in detail. | [8] |
| | b) | What are the design issues in developing program model for an Orchestra? | [7] |
| 6 | a) | Explain the process of Target Image Creation for Window XP Embedded. | [8] |
| | b) | Write the steps in Porting RTOS on a Micro Controller based Development Board. | [7] |
| 7 | a) | Write about the programming concepts in Linux. | [8] |
| | b) | What is system programming? Explain in detail. | [7] |
| 8 | a) | Explain Core RT Linux API. | [8] |
| | b) | Write about the Mutex management in RT Linux done with an example. | [7] |

Code No: **R42049** **R10** **Set No. 3**

**IV B.Tech II Semester Regular/Supplementary Examinations, April – 2015**

# REAL TIME OPERATING SYSTEMS

**(Common to Electronics & Communication Engineering, Electronics & Instrumentation Engineering and Electronics & Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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1 a) Define the table for kernel services in an operating system with functions and actions. [8]

b) What are the aspects to be considered during the preliminary design of RTOS for multi-tasking support? [7]

2 a) Discuss briefly scheduling algorithms in VX works. [8]

b) Write about the Programming concepts of above RTOS with relevant Examples. [7]

3 a) How are the real time features implemented in Windows CE. [8]

b) Explain the inheritance protocol implementation in RT Linux. [7]

4 a) Explain the design of embedded system and coding for an Automatic Chocolate Vending Machine Using Mucos. [8]

b) Write the coding steps for sending application layer byte streams on a TCP/IP Network Using Vx Works. [7]

5 a) Write the design issues of Embedded System in Automobile. [8]

b) Discuss about the design of Embedded System in Mobile Phone Software for Key Inputs. [7]

6 a) How is the Target Image Creation for Window XP Embedded done? [8]

b) Explain the steps in Porting RTOS on a Micro Controller based Development Board. [7]

7 a) Write an overview of shell programming concepts in Linux. [8]

b) Explain the tolls used in system programming. [7]

8 a) Explain the function of the following registers and their offset address of Ethernet controller used in Embedded Linux :
i) Hardware Address Registers ii) Transmit states of Descriptors
iii) Transmit start address of Description iv) Command Register. [8]

b) Write a Case Study of Appliance Control by RT Linux System. [7]

Code No: **R42049** **R10** **Set No. 4**

**IV B.Tech II Semester Regular/Supplementary Examinations, April – 2015**

# REAL TIME OPERATING SYSTEMS

**(Common to Electronics & Communication Engineering, Electronics & Instrumentation Engineering and Electronics & Communication Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**
**All Questions carry equal marks**
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| | | | |
|---|---|---|---|
| 1 | a) | Illustrate the role of interrupts their functioning in RTOS with suitable examples. | [8] |
| | b) | Discuss I/o subsystem in atypical I/o system in an OS. | [7] |
| 2 | a) | Write about the Programming concepts of Mucos-II with relevant Examples. | [8] |
| | b) | Illustrate how the synchronization through binary semaphores done in VX works. | [7] |
| 3 | a) | Discuss the real time Programming concepts of Windows CE | [8] |
| | b) | Bring out the difference in OSEK, RTOS Linux. | [7] |
| 4 | a) | Write the design and coding of an Automatic Chocolate Vending Machine Using Mucos RTOS. | [8] |
| | b) | Draw and explain the digital camera hardware and software architecture | [7] |
| 5 | a) | Write about the program development modelling of Robots with RTOS. | [8] |
| | b) | Explain the design issues in an Embedded System for an Adaptive Cruise Control System in Car. | [7] |
| 6 | a) | Discuss about the Off-The-Shelf Operating Systems | [8] |
| | b) | Explain about the Target Image Creation for Window XP Embedded. | [7] |
| 7 | a) | With the help of diagram explain the architecture of a generic Linux system. Explain the following i) Write ii) Read iii) Exec iv) Fork | [8] |
| | b) | Write about the concepts of shell programming. | [7] |
| 8 | a) | Develop a Program to display a message periodically using RT Linux | [8] |
| | b) | Explain the semaphore management done in RT Linux. | [7] |