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06EC762

Seventh Semester B.E. Degree Examination, December 2011
Real Time Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Define real time systems. Explain different types of real time systems. (04 Marks)
b. Describe the elements of a computer control system. (08 Marks)
c. Discuss the different types of programs in system design. (06 Marks)
d. Classify RTS, based on time constraints. (02 Marks)
- 2 a. With an example, explain sequence control in field application. (10 Marks)
b. Explain supervisory control, with an example. (05 Marks)
c. Write a note on Hierarchical systems. (05 Marks)
- 3 a. Explain digital signal interference, with a neat diagram. (08 Marks)
b. Describe multi – level interrupts. (06 Marks)
c. Write an explanatory note on pulse input and output interfaces. (06 Marks)
- 4 a. Discuss the requirements that a user should look for, in a programming language. (08 Marks)
b. Define the following with respect to real time programming languages :
i) Scope and visibility ii) Global and local variables iii) Modularity
iv) Data types v) Derived types vi) Exception handling. (12 Marks)

PART - B

- 5 a. Discuss the two methods of code sharing, in detail. (08 Marks)
b. Briefly explain mutual exclusion. (06 Marks)
c. What are the two scheduling strategies? Explain briefly. (06 Marks)
- 6 a. Explain data transfer without synchronization. (08 Marks)
b. What do you mean by semaphores? Explain. (06 Marks)
c. List and explain the three levels of priority structures. (06 Marks)
- 7 a. Explain mutual exclusion, using conditional flags. (06 Marks)
b. With a neat flow chart, describe the single program approach, with reference to RTS design. (08 Marks)
c. Write a note on the basic software module, with respect to RTS. (06 Marks)
- 8 Write explanatory notes on the following :
a. Hatley and Pirbhai method. (10 Marks)
b. Ward and Mellar method. (10 Marks)

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Real Time Systems

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define real time system. Classify them based on time constraints. (06 Marks)
b. Explain the different types of programs in system design. (10 Marks)

OR

- 2 a. Explain briefly sequence control with neat diagram. (06 Marks)
b. What is DDC? Explain with block diagram. (06 Marks)
c. Write a short note on hierarchical system. (04 Marks)

Module-2

- 3 a. What is necessity of using specialized processors in RTS? (04 Marks)
b. Explain the different forms of parallel computer architectures. (12 Marks)

OR

- 4 a. Explain digital input and output interface. (08 Marks)
b. Explain the basic interrupt input mechanism with diagram and flowchart. (08 Marks)

Module-3

- 5 a. List and explain various requirements in programming languages used in real-time applications. (08 Marks)
b. Explain briefly declaration and initialization of variables and constants. (08 Marks)

OR

- 6 a. What are the data types? Explain each one briefly. (10 Marks)
b. Write short notes on overview of real time languages. (06 Marks)

Module-4

- 7 a. Explain with neat diagram structures of RTOS. (08 Marks)
b. Explain cyclic and preemptive scheduling strategies. (08 Marks)

OR

- 8 a. Draw and explain task state diagram. (08 Marks)
b. Explain the general structures of Input Output Sub System (IOSS) (08 Marks)

Module-5

- 9 a. With neat flow-chart describe single program approach with reference to RTS design. (08 Marks)
b. Explain software design of RTS using software module. (08 Marks)

OR

- 10 a. Explain the outline of abstract modeling approach of ward and Mellor. (10 Marks)
b. Write a short note on YOURDON-METHODOLOGY. (06 Marks)

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Seventh Semester B.E. Degree Examination, Dec.2013 / Jan. 2014

Real – Time Systems

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting atleast TWO question from each part.
2. Standars Notations are used.**

PART - A

- 1 a. What is meant by Real – Time systems? Explain the classification of Real - Time systems. (08 Marks)
b. Explain : i) Sequential program ii) Multitasking program iii) Real – Time program. (06 Marks)
c. With suitable block diagram, explain the generalized computer control system. (06 Marks)
- 2 a. Explain the batch process and continuous process. (06 Marks)
b. Explain the supervisory control system, with neat block diagram. (06 Marks)
c. List the advantages and disadvantages of DDC. (04 Marks)
d. Write any four responsibilities of a control engineer. (04 Marks)
- 3 a. Explain process related interface, with suitable examples. (08 Marks)
b. Mention the features of specialized processors and explain MIMD, with a neat diagram. (06 Marks)
c. Define : i) Asynchronous and Synchronous Transmission Technique ii) Interrupt response vector iii) Polling. (06 Marks)
- 4 a. List the various requirements in programming languages used for real – time applications. (12 Marks)
b. Explain the approaches of application oriented software. (08 Marks)

PART - B

- 5 a. Explain with a suitable diagram, the multi – user and multi – tasking operating systems. (10 Marks)
b. What are the functions of a task management module? Explain various tasks states, with the help of a state diagram. (10 Marks)
- 6 a. What is code sharing? Explain the serially reusable and reentrant code. (08 Marks)
b. Explain the mutual exclusion using binary semaphore. (06 Marks)
c. Explain with a neat diagram, the general structure of IOSS. (06 Marks)
- 7 a. Explain foreground and background systems, with flowchart. (08 Marks)
b. Explain software design for RTS using software module. (08 Marks)
c. What is the principal difference between pool and channel? (04 Marks)
- 8 a. Explain with relevant diagrams, the Ward and Meller method. (08 Marks)
b. Explain Yourdon methodology. (06 Marks)
c. Write a short note on software modeling. (06 Marks)

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Seventh Semester B.E. Degree Examination, June 2012
Real Time Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Define a real time system. Explain generalized computer control system with hardware and software interface details. (10 Marks)
b. Classify real time systems based on time constraint with an example for each and appropriate equations. (10 Marks)
- 2 a. With a neat block diagram, explain Direct Digital Control. (07 Marks)
b. Write PID control algorithm. (03 Marks)
c. Describe supervisory control with a neat block diagram. (06 Marks)
d. Discuss gain scheduled programmed adaptive control. (04 Marks)
- 3 a. Briefly explain the following:
i) Parallel computers ii) Polling iii) DMA (06 Marks)
b. Explain analog interface for input and output operation. (08 Marks)
c. With a neat block diagram, explain interrupt masking. (06 Marks)
- 4 a. Define CUTLASS. What are the major requirements of CUTLASS? Describe CUTLASS host target configuration. (10 Marks)
b. With an example program, Explain interrupts and device handling. (10 Marks)

PART – B

- 5 a. Explain typical structure of a real time operating system (RTOS). (06 Marks)
b. What are the basic functions of the task management module? With system commands explain RTOS task state diagram. (10 Marks)
c. What do you mean by minimum operating system Kernel? List its functions. (04 Marks)
- 6 a. What is code sharing? How do you overcome code sharing problem? Explain. (10 Marks)
b. Write a note on detailed arrangement of IOSS. (05 Marks)
c. Explain different mechanisms supported by RTOS for the transfer of data between tasks. (05 Marks)
- 7 a. Discuss preliminary design details of real time system. (10 Marks)
b. Define mutual exclusion principle and explain mutual exclusion with a neat flow chart and sample program. (10 Marks)
- 8 a. Write a note on:
i) Yourdon methodology. (05 Marks)
ii) Drying oven-context diagram. (07 Marks)
b. Differentiate : Ward and Mellor methodology and Hotley and Pirbai methodology. (05 Marks)
c. List various real time system development methodologies. (03 Marks)

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