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10EC/TE762

# Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
# 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. What is real time system? Explain general computer control system with neat block diagram **(08 Marks)**

b. Define the term "Time constraint"? How are RTS classified based on time constraint? **(06 Marks)**

c. Discuss different types of programs in system design. **(06 Marks)**

2 a. With an example explain sequence control n field application and write the block diagram of typical chemical batch processing. **(10 Marks)**

b. Explain dual computer scheme. **(05 Marks)**

c. Explain DDC and its advantages with neat diagram. **(05 Marks)**

3 a. Explain interrupt vectoring using priority encoder circuit. **(06 Marks)**

b. Explain digital interfaces. **(08 Marks)**

c. Explain different LAN topologies. **(06 Marks)**

4 a. List and explain various requirements in programming languages used in real time applications. **(12 Marks)**

b. Explain simple table driven approach used for application oriented software. **(08 Marks)**

## PART – B

5 a. What are the functions of task states with task state diagram? **(10 Marks)**

b. Explain different scheduling strategies. **(06 Marks)**

c. Explain : i) Task chaining ii) Task swapping. **(04 Marks)**

6 a. Explain the problem of shared memory. How semaphores are used to overcome this problem **(10 Marks)**

b. Explain live-lock, deadlock and indefinite postponement in brief. **(06 Marks)**

c. Explain : i) pool ii) channel. **(04 Marks)**

7 a. With neat flow chart, describe single program approach with reference to RTS design. **(10 Marks)**

b. Explain software design of RTS using software module. **(10 Marks)**

8 a. Explain functional specifications with respect to a drying oven. **(08 Marks)**

b. Explain Yourdon methodology. **(06 Marks)**

c. Differentiate between the ward and Mellor method and Hatley and Pirabhai methodologies. **(06 Marks)**

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10EC762

# Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017
# Real Time System

Time: 3 hrs. Max. Marks:100

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



## PART – A

1 a. Define real time system. Classify them based on time constraints. **(04 Marks)**

b. Explain the different types of programs in system design. **(06 Marks)**

c. Explain in detail, the generalized computer control system showing hardware and software interface. **(10 Marks)**

2 a. List out the activities and objectives carried out by computer in computer control application. **(06 Marks)**

b. What is DDC? Explain in brief the different possible techniques used for it. **(10 Marks)**

c. Write a note on hierarchical system. **(04 Marks)**

3 a. What is necessity of using specialized processors in RTS? Explain the different forms of parallel computer architectures. **(10 Marks)**

b. Explain the basic interrupt input mechanism with diagram and flow chart. **(06 Marks)**

c. Explain multilevel interrupts. **(04 Marks)**

4 a. List and explain in brief, the major requirement for a real time language. **(12 Marks)**

b. Explain with block diagram, the table driven approach to devise special application software. **(08 Marks)**

## PART – B

5 a. Explain with neat diagram, the typical structure of a RTOS. **(06 Marks)**

b. List the basic functions of the task management. Explain the task states with the help of task state diagram. **(08 Marks)**

c. Explain the three levels of priority structure. **(06 Marks)**

6 a. Describe in brief mutual exclusion. **(04 Marks)**

b. Explain the general structure of input output sub system (IOSS). **(06 Marks)**

c. Explain the issues of synchronization and communication in inter task communication. **(10 Marks)**

7 a. With respect to real time design, describe the single program approach with flow chart. **(08 Marks)**

b. Explain with diagram, how data will be shared with common memory. **(06 Marks)**

c. With diagram, describe basic software module. **(06 Marks)**

8 a. Explain in detail Hartley and Pirbhai method. **(10 Marks)**

b. Explain with respect to Ward and Mellor method, the following:
   i) Dry-oven context diagram.
   ii) First level transformation diagram for dry-oven. **(10 Marks)**

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10EC/TE762

# Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015

## 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. Classify RTS based on time constraints. **(06 Marks)**

b. Explain the following:
i) Clock based tasks ii) Event based tasks iii) Interactive system **(06 Marks)**

c. Differentiate real time systems and non-real time systems. **(02 Marks)**

d. Explain the following program types: i) Multi-tasking; ii) Real time. **(06 Marks)**

2 a. Explain sequence control for a single chemical reactor vessel, with neat sketch. **(06 Marks)**

b. With neat diagram, explain loop control and give the advantages of DDC over analog control. **(08 Marks)**

c. With neat sketch, explain hierarchical systems. **(06 Marks)**

3 a. With a diagram, explain digital input interface. **(06 Marks)**

b. Explain with a neat diagram analog output system. **(05 Marks)**

c. Draw single chip computer and explain. **(03 Marks)**

d. Explain communications and the ways of characterizing serial communication techniques. **(06 Marks)**

4 a. Explain the following: i) Security, ii) Readability, iii) Portability **(09 Marks)**

b. Explain exception handling. **(06 Marks)**

c. Explain co-routines. **(05 Marks)**

### PART – B

5 a. With neat diagram explain priority structures. **(07 Marks)**

b. Explain scheduling strategies. **(05 Marks)**

c. Give the basic functions of task management. Explain task states with a typical task diagram. **(08 Marks)**

6 a. With a diagram, explain task chaining and swapping. **(05 Marks)**

b. Draw the figure for: i) non partitioned, ii) partitioned memory. **(02 Marks)**

c. Explain semaphore. **(05 Marks)**

d. What is Liveness? Explain. **(08 Marks)**

7 a. Explain software design in case of preliminary design of RTSS with diagram. **(08 Marks)**

b. With flow-chart explain foreground/background approach. **(08 Marks)**

c. Explain multi-tasking approach. **(04 Marks)**

8 a. Explain Yourdon methodology. **(05 Marks)**

b. Draw and explain context diagram for drying oven in case of ward and Mellor method. **(08 Marks)**

c. Differentiate between Ward & Mellor and Hatley & Pirbhai methodologies. **(02 Marks)**

d. Explain the architecture model in case of Hatley and Pirbhai method. **(05 Marks)**

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