Code No: **RT42043C** **R13** **Set No. 1**

IV B.Tech II Semester Regular Examinations, April/May - 2017

EMBEDDED SYSTEMS

(Common to Electronics & Communication Engineering, Electronics & Instumentation Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B

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PART–A ***(22 Marks)***

1. a) What is meant by Embedded firmware? [3]
   b) What are Timer and counting devices? [4]
   c) What are concepts of Embedded C? [4]
   d) What are the types of RTOS? [3]
   e) What are types of files generated on cross-compilation? [4]
   f) What are the various simulators used for Embedded system testing? [4]

PART–B ***(3x16 = 48 Marks)***

2. a) Draw and explain the typical Embedded system architecture? [8]
   b) Illustrate an application-specific Embedded system with suitable example? [8]

3. a) What are the various serial communication devices used in an Embedded Hardware? Explain any one of them? [8]
   b) Discuss about Real time clock with respect to an Embedded Hardware? [8]

4. a) Explain any one of Embedded firmware design approaches in detail? [8]
   b) Tabulate the concepts of compiler and cross compiler relevant to an Embedded Firmware? [8]

5. a) Discuss about Multiprocessing and Multitasking techniques used in RTOS? [8]
   b) Briefly explain (i) Task scheduling (ii) Hardware software trade-offs [8]

6. a) Draw and explain the integrated embedded system development environment. [8]
   b) Write notes on Embedded software development-process? [8]

7. Write short notes on the following
   a) Translation Tools
   b) Debugging Tools [16]

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Code No: **RT42043C** **R13** **Set No. 2**

IV B.Tech II Semester Regular Examinations, April/May - 2017

EMBEDDED SYSTEMS

(Common to Electronics & Communication Engineering, Electronics & Instumentation Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) What is operational quality attribute? [3]
   b) What is the operation of transistor based relay driver circuit [4]
   c) What is the difference between C and Embedded C [4]
   d) What is process life cycle? [3]
   e) What are the advantages of simulator base debugging? [4]
   f) What is a target system? How does the target system differ from the final embedded system? [4]

PART–B *(3x16 = 48 Marks)*

2. a) What is Digital Signal Processor? Explain the role of DSP in embedded system design. [8]
   b) Explain the different characteristics of embedded systems in detail? [8]

3. a) Explain the role of Watchdog timer in embedded system [8]
   b) Compare the operation of ZigBee and Wi-Fi networks [8]

4. a) Explain the advantages and disadvantages of high level language based embedded firmware development. [8]
   b) What is Device driver? explain about device driver programming [8]

5. a) What is the difference between general purpose kernel and real time kernel? Give example. [8]
   b) Explain the different multitasking models in operating system context [8]

6. a) Explain in detail about different files generated during the cross compilation of an Embedded C file [8]
   b) What is a monitor program? Explain role in embedded firmware debugging. [8]

7. Explain in detail about below terms
   a) Interpreters b) Simulator c) Linkers [16]

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Code No: **RT42043C** **R13** **Set No. 3**

IV B.Tech II Semester Regular Examinations, April/May - 2017

EMBEDDED SYSTEMS

(Common to Electronics & Communication Engineering, Electronics & Instumentation Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B

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PART–A ***(22 Marks)***

1. a) What is non-operational quality attribute? [3]
   b) What is role of reset circuit in embedded systems? [4]
   c) What is macro in embedded C? [3]
   d) What are the activities involved during context switching? [4]
   e) What is logic Analyzer? [4]
   f) What do you mean by application software for a target system? [4]

PART–B ***(3x16 = 48 Marks)***

2. a) Explain *time to market*? What is significance in product development? [8]
   b) Explain the different communication buses used in automotive application [8]

3. a) Explain the role of Real time clock in embedded system [8]
   b) Explain the merits and limitations of parallel port over serial interface [8]

4. a) Explain the advantages and disadvantages of Assembly language based embedded firmware development. [8]
   b) What is ISR? explain about Interrupt servicing mechanism [8]

5. a) What is task scheduling? Explain Round Rabin scheduling algorithm [8]
   b) Explain about how to choose an RTOS [8]

6. a) Explain role of integrated development environment for embedded software development [8]
   b) Explain the different tools used for hardware debugging [8]

7. a) Explain in detail Translation tools-Pre-processors [8]
   b) Explain about Laboratory Tool [8]

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Code No: **RT42043C** **R13** **Set No. 4**

IV B.Tech II Semester Regular Examinations, April/May - 2017

EMBEDDED SYSTEMS

(Common to Electronics & Communication Engineering, Electronics & Instumentation Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B

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PART–A ***(22 Marks)***

1. a) What are the difference between general purpose computing and embedded systems [4]
   b) What is watchdog timer? [3]
   c) What is Assembly language programming? [4]
   d) What is ICE? [4]
   e) What are the limitations of simulator base debugging? [4]
   f) What are Laboratory Tools? [3]

PART–B ***(3x16 = 48 Marks)***

2. a) Explain different classification of embedded systems with example [8]
   b) Explain the role of embedded systems in automotive domain [8]

3. a) Explain in detail about USB. [8]
   b) Explain about Timer and counting devices in Embedded Hardware. [8]

4. a) Explain the different embedded firmware design approaches in detail [8]
   b) What is interrupt? What is role embedded application development? [8]

5. a) Explain the architecture of device river [8]
   b) What is critical section? What are the different techniques to control critical section? [8]

6. a) Explain the various elements of an embedded system development environment [8]
   b) Explain in detail about Boundary scan [8]

7. a) Explain about main software utility tool [8]
   b) What is Quality assurance and testing of the design? Explain in detail. [8]