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(Following Paper ID and Roll No. to be filled in your Answer Books)

PAPER ID : ME17

Roll No. | | | | | | | | | | |

M. TECH. (Sem.II)

THEORY EXAMINATION 2015-16

EMBEDDED SYSTEM DESIGN

Time : **3** Hours Total Marks : **100**

Note : All questions are compulsory.

1. Attempt any two of the following (10×2)

(a) Give the structure of ports of 8051 and discuss roles of each port. Also write a program to create a square wave of 50% duty cycle on pin P1.0 of port 1.

(b) Discuss serial data transmission modes of 8051 microcontroller? Write a program to transfer letter 'A' serially at 4800 baud, continuously.

(c) a. Discuss the addressing modes of 8051 microcontroller with proper examples of Each.

b. How the RET and RETI instructions are different.

2. Attempt any two of the following. (10×2)

(a) What are the various types of semaphores? How the semaphores are used to resolve the shared data problem? What is deadly embrace problem?

(b) Differentiate among message queues, mailbox and pipes? Write the example code for handling task errors through message queues.

(c) Justify the following rule "An interrupt routine may not call any RTOS function that might cause RTOS to switch task unless the RTOS knows that an interrupt routine, and not a Task, is executing. What are the solutions to this rule?

3. Attempt any two of the following. (10×2)

(a) Differentiate between real time operating system and general operating systems. What are the various scheduling algorithms? How RTOS scheduling differ from other scheduling algorithms?

(b) How the debugging of embedded systems is done? Give examples.

(c) Enlist all the types of files generated, while developing embedded software. Give the significance of each file.

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4. Attempt any two of the following. (10×2)

(a) How will you choose a processor for your embedded system design? Also give the ESD and Co-design issues in embedded system development process.

(b) What is an IDE? How debugging tools such as In-circuit Emulators and Simulators are used in developing embedded systems.

(c) Discuss the components of design cycle in the development of embedded systems.

5. Write short notes on any four of the following. (5×4)

(a) Why CAN Bus is an important Embedded Protocol? Give its specifications and characteristics.

(b) How will you differentiate ETHERNET and INTERNET? Also discuss stack of Bluetooth and its specifications.

(c) What is the purpose of IEEE 1149.1(JTAG) Testability? How boundary scan architecture is used for this purpose?

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