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**A 1316**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Information Technology

IF 363 — EMBEDDED ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are tri-state devices and why it is needed?
2. Define the terms hold time and startup time.
3. What is microcontroller and how it is different from microprocessor?
4. What is the difference between periodic polling and regular interrupts?
5. What is input capture and output capture?
6. Name the five different methods of I/O synchronization.
7. List the guidelines for selection of architecture for an embedded system.
8. What is meant by IDE?
9. What is a task state?
10. State the advantage and disadvantages of short system clock.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the advantages of edge-triggered and level-triggered interrupts? (8)
- (ii) Compare the characteristics of different type of ROM. (8)

Or

- (b) (i) Describe the difficulties in writing the embedded software. (6)
- (ii) What is shared data problem and what the methods available for solving shared data problem? (10)

12. (a) (i) With a neat diagram explain how parallel slave port facilitates the design of PC interface circuitry. (8)
- (ii) Briefly explain the purpose of Timer 0, Timer 1 and Timer 3. (8)

Or

- (b) (i) Describe the operation of any one type of analog to digital converter. (8)
- (ii) Briefly explain I<sup>2</sup>C Bus operation. (8)

13. (a) (i) Explain the architecture of a typical Motorola Microcomputer with a block diagram. (8)
- (ii) Discuss the basic concepts of high speed I/O interfacing. (8)

Or

- (b) (i) What is an interrupt and are the instructions available to disable and enable the interrupts? Explain in detail. (8)
- (ii) Compare and contrast synchronous, partially asynchronous and fully asynchronous buses in detail. (8)

14. (a) (i) What is a simulator and what are the benefits and limitations of simulators? (8)
- (ii) Describe the process of building software for an embedded system with suitable diagram. (8)

Or

- (b) (i) Describe the role of in-circuit emulator in the design embedded system. (8)
- (ii) Briefly explain the functions of a logic analyzer and also state the advantages of logic analyzers over emulators. (8)

15. (a) (i) Briefly explain the method available for intertask communication in RTOS. (8)
- (ii) What is RTOS and what are the different timing services provided by the RTOS? (8)

Or

- (b) (i) Describe the major issues in designing embedded system software. (8)
- (ii) What is a task and what are the different states of a task in an RTOS? (8)

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