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R 3476

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Sixth Semester

Mechatronics Engineering

MH 1001 — EMBEDDED SYSTEM AND DESIGN

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. With respect to embedded system what is requirement phase?

2. Why can't you use microcontroller I/O pins as chip enable pins for ROM and RAM?

3. Differentiate full address and half duplex.

4. How to handle complicated data in real time systems?

5. What is Soft Real Time?

6. What is ACIA?

7. What is cross compiler?

8. What is profiling?

9. List four interrupt routines in RTOS environment.

10. What is the semaphore with respect to embedded system?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the relative advantages and disadvantages of DMA program I/O and memory mapped I/O techniques as they pertain to real time systems. (16)

Or

(b) Explain the process of interrupt handling and integrating interrupt in a Real Time Environment. (16)

12. (a) Explain the internal architecture of a typical micro controller. (16)

Or

(b) (i) Write short notes on UART. (8)

(ii) Explain the different type of addressing modes of a typical Microcontroller. (8)

13. (a) Explain the features of RS 232 and RS 485 serial I/O briefly. (16)

Or

(b) (i) List the sequence of event that occurs during an interrupt service. Explain each event. (8)

(ii) Briefly explain interrupt vector and priority. (8)

14. (a) (i) Illustrate any one scheduling algorithm. (8)

(ii) Illustrate the features of IDE. (8)

Or

(b) (i) Explain the functions performed by linker and loader for embedded software in detail. (8)

(ii) Briefly explain functional debugging. (8)

15. (a) Give the clear cut design of "A tank Monitoring System" — as an embedded system with required software and hardware architecture. (16)

Or

(b) Write short notes on the following :

(i) Message Queue.

(ii) Shared data operating system. (8 + 8)