Reg. No. :

L 1261

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Sixth Semester

Mechatronics Engineering

EC 348 — MICROCONTROLLER AND APPLICATIONS

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate microcontrollers from microprocessors.

2. Define SCON special purpose register of 8051.

3. Mention the use of LJMP instruction with an example

4. What is the function of IP register in 8051?

5. Specify the steps involved in the evolution of microcontroller-based system.

6. What is meant by software-polled timer?

7. What are the necessary properties be possessed by a keyboard program?

8. How are multiple interrupts handled in 8051?

9. Mention why mode 0 is not suitable for 8051 communication.

10. What is framing error? What modes of 8051 can detect a framing error?

PART B — (5 × 16 = 80 marks)

11. (a) (i) List the features of 8051 microcontroller. (4)

    (ii) Explain the architecture of 8051 microcontroller with a neat diagram. (12)

    Or

    (b) (i) Draw the pin configuration of 8051 and explain the function of each pin in detail. (8)

    (ii) Explain serial communication mode supported by 8051. (8)

12. (a) (i) Explain in detail the different addressing modes supported by 8051. (8)

    (ii) Explain the interrupt structure of 8051. (8)

    Or

    (b) (i) Explain all logical operations of 8051 with examples. (8)

    (ii) Write a program using 8051 assembly language to add three BCD numbers. (8)

13. (a) Discuss the design of a 8051 microcontroller based system with necessary diagrams. (16)

    Or

    (b) (i) Explain how timing delays can be introduced in a microcontroller-based systems. (10)

    (ii) Explain microcontroller design testing process. (6)

14. (a) (i) Explain the matrix keyboard interface of 8051 with neat diagram. (8)

    (ii) Interface Seven-Segment LED display to 8051 and explain. (8)

    Or

    (b) Give a complete scheme to interface an 8-bit ADC to 8051 microcontroller. Draw a flowchart and write an assembly language program. (16)

15. (a) Explain different modes of operations of serial port in 8051 indicating various registers associated with it. (16)

Or

(b) Explain in detail the multiprocessor communication in 8051. (16)