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Reg. No.....

Name.....



**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Sixth Semester**

Branch : Electrical and Electronics Engineering

EE 010 605—MICROCONTROLLERS AND EMBEDDED SYSTEMS (EE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Maximum : 100 Marks

Time : Three Hours

**Part A**

*Answer all questions briefly.  
Each question carries 3 marks.*

1. Compare briefly microprocessors and microcontrollers.
2. Name *three* addressing modes of 8051. Give examples.
3. What are the various sources of interrupts in 8051 ?
4. Show how a DAC can be interfaced to 8051.
5. What are the various reset conditions of PIC 16F877 microcontroller ?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.  
Each question carries 5 marks.*

6. Discuss the memory mapping of 8051.
7. What are the various jump and call instructions in 8051 ? Give examples.
8. Explain the Timer/Counter programming in 8051. What are the SFRs associated with it ?
9. With diagram, explain how external RAM can be connected to 8051.
10. Discuss briefly on Data memory mapping of PIC 16F877 microcontroller.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.  
Each full question carries 12 marks.*

11. With a neat block diagram, describe the architecture of 8051 microcontroller.

Or

12. What are the various SFRs in 8051 ? Explain the function of each.

Turn over

13. Write a program to copy the value 55 H into RAM locations 40H to 45 H using :
- (a) Direct addressing mode ;
  - (b) Register indirect addressing mode without a loop ; and
  - (c) With a loop.

(3 × 4 = 12 marks)

Or

14. Write a program to generate two square waves one of 5 kHz frequency at pin 1.3 and another of frequency 25 kHz at pin 2.3. Assume XTAL = 22 MHz.

15. (a) Discuss how interrupts are enabled or disabled in 8051 microcontroller. (5 marks)  
(b) Write a program to measure the width of a pulse appearing at the pin INTO. (7 marks)

Or

16. (a) What are the SFRs you need while programming a serial port ? Write a short program to initialize the serial port of 8051 in mode 1.

(8 marks)

- (b) What are the various modes of serial data communication ? (4 marks)

17. Explain with neat diagram, the interfacing of an LCD module to 8051. Write the assembly language program to display the message 'NO'.

Or

18. Discuss with neat diagram how a stepper motor can be controlled using 8051 microcontroller.

19. Describe the architecture of PIC 16F877 microcontroller with neat block diagram.

Or

20. (a) Describe the interrupt structure in PIC 16F877 microcontroller. (8 marks)

- (b) What are the various addressing modes in PIC 16F 877 microcontroller ? (4 marks)

[5 × 12 = 60 marks]

