F 3055 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, DECEMBER 2012

Fifth Semester

Branch : Information Technology

IT 010 502 – MICROPROCESSOR AND MICROCONTROLLERS (IT)

(Regular - New Scheme)

Time : Three Hours Maximum : 100 Marks

Part A

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

1. What are the uses of $\overline{DEN}$ and $\overline{BHE}$ signals of 8086?
2. Name and briefly explain three special address transfer instructions.
3. What is the need for key debounce circuit in 8279?
4. Explain the instruction for multiplication in 8051 instruction set?
5. How does a serial line differ from a serial bus?

(5 × 3 = 15 marks)

Part B

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

6. Draw the timing diagram of MOV [SI], AL instruction and explain signal flow.
7. Explain the following instructions:

   (i) LAHF (ii) LDS (iii) LEA (iv) DAA (v) TEST.
8. Draw and explain status word register of 8251.
9. Write into accumulator 98H and then execute RRC three times and then add with 70H. What will be the results in A and in the flags? Assume C = 0 to start with.
10. Draw an interface for 3 scan (encoded) lines and 5 return lines in a keypad.

(5 × 5 = 25 marks)

Turn over

Part C

Answer any **one** *full question from each module.*
Each full question carries 12 *marks.*

Module I

11. Draw and explain the minimum mode circuit connection of 8086. Explain the minimum mode bus timing for a memory read operation.

Or

12. (a) Explain the register organisation of 8086.

    (b) Describe the memory segmentation in 8086. What are its advantages?

Module II

13. (a) Write a note on assembler directives and operators of 8086.

    (b) Explain the interrupt cycle of 8086.

Or

14. Write an 8086 ALP to find the even numbers of a given array and store them in a separate consecutive locations.

Module III

15. Interface a 4 × 4 keyboard with 8086 using 8255 and write an ALP for detecting a key closure and return the key code in AL. The debouncing period for a key is 10 mS. Use software key debouncing technique. DEBOUNCE is an available 10 mS delay routine.

Or

16. With the help of a neat block diagram, explain the internal architecture of 8279. Also explain the different input (keyboard) modes and output (display) modes.

Module IV

17. Show the signals at the pins of 8051. Explain meaning of each signal. Also, indicate when a signal is input and when output. What are the signals multiplexed at the port PO and what at port P3?

Or

18. Describe the different types of data transfer instructions in 8051. Explain the differences between MOV, MOVC and MOVX instructions.

Module V

19. There is a mosquito trap which generates an active low transition on each trap of the mosquito. How will you use an 8051 timer to count the number of traps in one hour? Show the block schematics?

Or

20. Interface 8 digit seven - segment LED display using PPI to 8051. Draw the block circuit schematics and write the ALP routine to display the message on the above display.

(5 × 12 = 60 marks)