A 240

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Fifth Semester

Electronics and Communication Engineering

EC 331 — MICROPROCESSOR AND APPLICATIONS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different memory mapping schemes? Give any one advantage and disadvantage for each.

2. Write an 8085 assembly language program, which checks to see if the number is even or odd and if it is odd returns a '0' in B register else returns a '1'.

3. What are the alternate function of port 3 in the 8051 microcontroller?

4. Compare the 8051, 8031 and 8751 microcontrollers.

5. Give the function of the following 8086 CPU pins.

   (a) MN/$\overline{\text{MX}}$

   (b) $\overline{\text{LOCK}}$.

6. If the execution unit generates an effective address of 43 A 2 H and the DS register contains 4000 H what will be the physical address generated by the BIU? What is the maximum size of the data segment?

7. What are modes of operation supported by 8255?

8. What are the different registers available in a channel of DMA controller mention the use of any two registers?

9. What is the internal operating frequency of the 8279? How can you derive it from any available clock signal?

10. What is the significance of end of conversion signal while interfacing A/D converter to a microprocessor?

PART E — (5 × 16 = 80 marks)

11. (i) List the addressing modes of 8085 explain each mode with examples. (8)

(ii) Draw the architectural diagram of the 8051 microcontroller and give the function of each unit. (8)

12. (a) (i) How do you classify the 8085 interrupts what are they? How is the interrupt branch address obtain in each case? (8)

(ii) Draw the timing diagram of the DCX instruction. (8)

Or

(b) (i) What are interrupts available in the 8051? What are control registers available in the SFR area to control these register? Explain. (10)

(ii) Write a 8051 assembly language program to evaluate $Q = (u\,(v + w)) + (x \cdot \overline{y}) + \overline{z}$. (6)

13. (a) (i) Draw the schematic representation of 8086 CPU working in the maximum mode and explain the function of the components involved. (10)

(ii) Write an 8086 program to perform unpacked BCD division (eg. 75/2). (Operands are stored in the memory). (6)

Or

(b) Draw the register structure of 80386 and describe their function.

14. (a) With a block diagram explain the working of programmable interrupt controller.

Or

(b) Draw the block diagram of Intel 8255. Mention the operating modes. Explain how it can be used to realize a 4 × 4 keyboard matrix.

15. (a) Draw the hardware circuit required for interfacing a four phase stepper motor to a microprocessor. Give the flowchart of the software driving it in the clockwise and anticlockwise direction.

Or

(b) Draw the block diagram of microcontroller based smart scale. Give the algorithm and flowchart for the same.

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