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06EC62

Sixth Semester B.E. Degree Examination, June 2012
Microprocessors

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is a microprocessor? What are the components required to build a minimum microcomputer system? Explain with a neat diagram. **(06 Marks)**

b. What are the roles of each element in the BIU of 8086 CPU? Explain with a neat diagram. How is the 20-bit physical address for memory generated? Explain with an example. **(10 Marks)**

c. What is the minimum size and maximum size of an instruction in 8086? Explain with examples. **(04 Marks)**

2 a. Explain the importance of each field in Byte-1 and Byte-2 of the 8086 instruction template. If the 6-bit op-code for ADD instruction is "000000" then formulate the op-code/s for "ADD AX, CX" instruction. **(07 Marks)**

b. What are the pseudo codes? Explain the following directives with examples:
i) ENDP ii) EXTRN iii) GLOBAL iv) PROC. **(07 Marks)**

c. Write the single instruction equivalent for the following program segments if available and justify your answer; assume that these program segments are starting from memory location FFFF0h and 8086 is reset just before execution.

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i) FFFF0: MOV CL, 10h        ii) FFFF0: XOR AX, AX
          XCHG AX, BX                   MOV BX, AX
          ROR AX, CL                    ADD AX, BX
          XCHG AX, BX                   XCHG AX, BX
```

(06 Marks)

3 a. What is a procedure? What are its advantages? **(04 Marks)**

b. Write a 8086 procedure to convert a packed BCD number in AL to ASCII equivalent in AX. **(06 Marks)**

c. How do you invoke near procedures and far procedures in 8086? What are the methods available for parameter passing in procedures? **(06 Marks)**

d. What makes a MACRO facility to be preferred over a procedure in a program development? **(04 Marks)**

4 a. What is the response of 8086 μp when interrupted? Explain clearly. **(06 Marks)**

b. Explain the interrupt system of 8086 CPU with all the sources of interrupts. **(08 Marks)**

c. How many string instructions are available in 8086 instruction set? Explain briefly. **(06 Marks)**

PART – B

5 a. Why interfacing is required? Explain. **(03 Marks)**

b. What do you mean by key-debouncing? Explain briefly hardware debouncing and software debouncing methods. **(05 Marks)**

c. Interface a 4×4 keypad to 8086 CPU and write a program to identify any key pressed. Write necessary comments. **(12 Marks)**

6 a. What are the functions of the following 8087 instructions? Explain.
i) FBSTP TAX ii) FSUBR Dt, Sr iii) FXAM iv) FLDL2E **(06 Marks)**

b. Interface 8087 NDP to 8086 CPU; indicate all critical signal connections. **(07 Marks)**

c. Write a program to compute roots of a quadratic equation using 8087 instructions. **(07 Marks)**

7 a. What is maximum mode of operation for 8086 CPU means? Show all necessary arrangements for 8086 maximum mode. **(07 Marks)**

b. Write a program using 8086 instruction to check whether PCI bus extension is available using BIOS. **(06 Marks)**

c. For an USB in personal computer give;
i) Pin configuration ii) Two CRC polynomials iii) Token packet & data packet. **(07 Marks)**

8 a. Using a block diagram, briefly indicate different signal groups on 80386 processor. **(10 Marks)**

b. With a neat block diagram, explain the Pentium architecture and features. **(10 Marks)**

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