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10EC/TE62

Sixth Semester B.E. Degree Examination, June/July 2013

Microprocessors

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. With a neat diagram, explain the CPU architecture of 8086. **(08 Marks)**

b. Define any four addressing modes used in 8086 microprocessor. Identify addressing modes used in each of the following 8086 instructions:
   i) MOV BX, 0354H
   ii) ADD AL, [BX + 04]
   iii) MOV AX, [BX + SI]
   iv) MOV AX, [BX + SI + 04] **(08 Marks)**

c. If DS = AB40H, CS = 9960H, SS = 3B00H, BP = 7E74H, SP = 0135H, SI = 1245H, DI = 4356H, then determine physical address of the following instructions:
   i) MOV [BP + DI + 6], AH
   ii) ADD AL, [5036H] **(04 Marks)**

2 a. What do you mean by segment override prefix? Give an example. **(04 Marks)**

b. Explain the role of AAD and AAM instruction of 8086 microprocessor with an example. **(06 Marks)**

c. Write an assembly level language program to sort the numbers in ascending order using Bubble sorting technique. The program should be written using assembler Directives. **(10 Marks)**

3 a. What are Assembler Directives? Explain the following directives with an example for each:
   i) ASSUME
   ii) PUBLIC and EXTRN
   iii) GLOBAL
   iv) ALIGN16 **(09 Marks)**

b. Write an ALP to search a given character in the array of characters using string instructions. What is the role of SI, DI registers and DF bit? **(05 Marks)**

c. Write an ALP to read a string from the keyboard and display the reversed string on the monitor screen. **(06 Marks)**

4 a. Define interrupts. Explain TYPE0, TYPE1, TYPE2, TYPE3 and TYPE4 interrupts. **(06 Marks)**

b. Explain hardware interrupts of 8086 microprocessor. **(04 Marks)**

c. Differentiate macros and procedures. **(04 Marks)**

d. Write a macro to read a character without echo and to read a string of characters from the keyboard. **(06 Marks)**

PART – B

5 a. Define Stepper motor. Explain the interfacing of a stepper motor to 8086 microprocessor with necessary circuit diagram. Write an ALP to rotate the stepper motor clockwise by n steps and anticlockwise by m steps. **(10 Marks)**

b. Interface 4 × 4 keyboard to 8086 microprocessor using 8255. Write the necessary circuit diagram and an ALP. **(10 Marks)**

6 a. What are the functions of following 8087 instructions? Explain.
   i) FCOMP
   ii) FENI
   iii) FDECSTP
   iv) FSTENV
   v) FYL2XP1 **(10 Marks)**

   b. Write a program using 8087 instructions to compute the volume of the sphere using MASM syntax. **(06 Marks)**

   c. Explain the control register format of 8087. **(04 Marks)**

7 a. With a neat diagram, explain the maximum mode operation of 8086. **(08 Marks)**

   b. What are the characteristics of PCI and USB interface? **(06 Marks)**

   c. Interface Printer 8086 processor with relevant signals of importance. Explain using a flowchart. **(06 Marks)**

8 Write short notes for the following:

   a. 80386 special registers **(06 Marks)**

   b. Salient features of 80486 processor **(06 Marks)**

   c. Pentium CPU architecture **(08 Marks)**

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