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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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