Sixth Semester B.E. Degree Examination, June/July 2017
Microprocessors

Time: 3 hrs.   Max. Marks:100

Note: 1. *Answer FIVE full questions, selecting at least TWO questions from each part.*
2. *Missing data be suitably assumed.*
3. *Standard notations are used.*

PART – A

1 a. Draw the internal architecture of 8086 microprocessor and explain the operation of the same.
      (08 Marks)
   b. Given [BX] = 8000H, [SI] = 9000H, [BP] = A000H, [DI] = D000H, [DS] = B000H, [SS] = C000H, [ES] = E000H, [AX] = 4567H. Calculate the effective address and physical address for :
      i)   MOV AX, 9211H
      ii) MOV BX, [BP +SI]
   c. iii) XLAT iv) MOVSB.   **(08 Marks)**
      What are the advantages of using segment Registers?   **(04 Marks)**

2 a. Briefly discuss the various Addressing modes of 8086 microprocessor with examples.
      (06 Marks)
   b. Identity the mistakes, if any, in each of the following instructions of 8086. Mention the reasons :
      i)   MOV AL, AL
      ii) MOV [CX], BL
      iii) MUL AL, BL
      iv) SHL BL, 5.   **(04 Marks)**
   c. Using 8086 processor instructions and suitable assembler directives, Write source code to find the square of a given two – digit Decimal number.   **(08 Marks)**
   d. Precisely explain the operation of :
      i) SAR instruction   ii) CBW instruction.   **(02 Marks)**

3 a. Discuss the ASCII Adjust Instructions of 8086 microprocessor.   **(06 Marks)**
   b. Discuss the Branch Instruction of 8086 Microprocessor.   **(08 Marks)**
   c. Write a source code to move a block of 100 bytes from source memory locations to destination memory locations. [Use string instructions].   **(06 Marks)**

4 a. Give the interrupt structure of 8086 microprocessor. Compare them with respect to Priority, type and triggering, vector address, Type number, Software or Hardware type.   **(06 Marks)**
   b. With simple programs, explain the significance of the following DOS functions :
      i) 01   ii) 02   iii) 08   iv) 09   **(10 Marks)**
   c. Briefly explain the function of debug commands → t, d, g, e.   **(04 Marks)**

PART – B

5 a. Explain the operation of a stepper motor. Give the hardware and software detail required to interface and rotate a stepper motor clockwise by 360° [make suitable assumption, if necessary].   **(12 Marks)**
   b. Discuss coprocessor configuration with the help of suitable diagrams.   **(08 Marks)**

6 a. List out the data types and the data ranges supported by 8087 NDP. (04 Marks)

b. Explain the operation of the following instructions of 8087 NDP :
i) FBLD   ii) FPREM   iii) F2XM1   iv) FLDL2T. (08 Marks)

c. Using 8086 – 8087 instructions and suitable assembler directives. Write a source code to find the diameter of a circle of area 25.6 square units (Note : Area of circle $= \pi r^2$ where, r = radius). (08 Marks)

7 a. With relevant figures, Discuss the significance of the following devices in computer communication:
USB and PCI Bus (08 Marks)

b. Explain the significance of special registers of 80386 processor. (04 Marks)

c. Compare the features of 80386, 80486 and Pentium processor. Draw the simplified architecture of a Pentium processor. (08 Marks)

8   Write short notes on the following :
a. Assembler Directives and operators
b. Procedures and macros
c. Keyboard and LED interfacing to 8086 processor
d. String instructions of 8086 microprocessor. (20 Marks)

* * * * *