EC 131504 NR

Roll No. of candidate

B.Tech. 5th Semester End-Term Examination

ECE + AEI

MICROPROCESSOR AND APPLICATIONS

(New Regulation)

Full Marks – 70   Time – Three hours

The figures in the margin indicate full marks
for the questions.

GROUP – A

1. Answer *all* the question :   (10)

   (i)   8086 is a (4 / 6 / 8 / 16) bit microprocessor

   (ii)   The (BIU / EU) fetches instructions and data from the memory to the processor.

   (iii)   The 8086 can access a maximum memory size of (1 KB/ 64KB/ 1MB / 8MB)

   (iv)   (Interpreter/ Assembler / simulator) is a software that is used to convert assembly level program to machine language program.

   (v)   The stack memory works in (LIFO / FIFO /LILO) principle.

   (vi)   (LES / LAHF /LEA / LDS) loads the register and DS with words from the memory.

   (vii)   (AX / BX/ CX/ DX) holds the offset address of a location in the memory

   (viii) (Data segment / Code segment / stack segment / Extra segment) contains the instructions of a program.

   (ix)   MOV AX, [BX] is an example of (immediate addressing / register addressing/ register indirect addressing / program memory addressing) mode.

   (x)   (10 / 16 / 12 / 20) address lines are required to connect a 4 KB RAM to a microprocessor?

GROUP – B

Answer *any four* questions.

2. (a) Explain the architecture of the 8086 with neat functional block diagram. (10)

   (b) How is the 20 bit physical memory address is calculated in the 8086 processor? Give example. (5)

3. (a) What are the steps involved when PUSH BX is executed by the 8086? (5)

   (b) Write the function of the following signals (5)

   NMI

   TEST

   M/IO

   DT/R

   HLDA

   (c) Differentiate the maximum and minimum mode of 8086. (5)

4. (a) What is the data in AX after execution of the third instruction and from where does the processor fetch the next instruction after execution of the fourth instruction? (5)

   MOV AX, 4000H

   ADD AX, AX

   RCL AX, 1

   JZ DOWN

   (b) What is the function of the assembler directive : DW and DB. (3)

   (c) Describe the different addressing modes in the 8086 giving examples of each. (7)

5. (a) Write an 8086 assembly language program to find the sum of 100 words present in an array stored from the address 3000h: 1000h in the data segment and store the result in the address 3000h: 2000h. (6)

   (b) Write the steps for execution of an interrupt signal. (4)

   (c) What is the difference between the memory mapped I/O and I/O mapped I/O mapping? (5)

6. (a) Interface two 8K × 8 EPROM chips with the 8086. (8)

(b) Draw the architecture of 8253. Write the control word format of the 8253. (7)

7. (a) Write an assembly language program to generate a square wave using the 8255. (7)

(b) Write the handshaking signals and their functions if port A of the 8255 is set up as an input port in mode 1. (8)

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