AV—1827

B.Sc. (Part–III) Semester–VI Examination
ELECTRONICS
(Advanced Microprocessor and Microcontroller)

Time : Three Hours]   [Maximum Marks : 80

Note :—(1) Question No. 1 is compulsory.

(2) Draw neat diagram wherever necessary.

1. (A) Fill in the blanks with appropriate word :

    (i)   Memory capacity of 8086 microprocessor is _____ .

    (ii) 8086 microprocessor has _____ control flags.

    (iii) Internal RAM in 8051 microcontroller is _____ byte.

    (iv) AVR status register is _____ bit.   2

    (B) Choose correct alternative :

    (i)   Data bus of 8086 microprocessor is _____ .

        (a)   16 bit   (b)   20 bit

        (c)   8 bit   (d)   8 byte

    (ii) 8051 flag register has _____ mathematical flags.

        (a)   2   (b)   4

        (c)   8   (d)   0

    (iii) 8051 has _____ ON chip ROM memory.

        (a)   4K   (b)   8K

        (c)   12K   (d)   16K

    (iv) AT mega 32A microcontroller is _____ pin IC.

        (a)   14 pin   (b)   20 pin

        (c)   40 pin   (d)   None   2

    (C) Answer in **one** sentence only :

    (i)   State general purpose registers of 8086.

    (ii) When AC flag sets in 8051 microcontroller ?

    (iii) What mode of operation is selected when MN/MX pin is grounded ?

    (iv) Write one instruction of data transfer group for 8051 microcontroller.   4

    EITHER

2. (A) Explain register organization of 8086 micro-processor. Explain function of each register.
                                                                                            8

    (B) Explain with example, how 20-bit physical address is generated in 8086 microprocessor.
                                                                                            4

OR

(P) Draw and explain flag register of 8086 μp.   6

(Q) Explain minimum mode of operation of 8086 microprocessor.   4

(R) Explain function of following pins :

  (i) $\overline{RD}$ (ii) $\overline{WR}$ 2

EITHER

3. (A) Explain addressing modes of 8086 microprocessor with example.   8

  (B) Draw flow chart and write an ALP program to add the contents of memory location 1000:0001H and 2000:0002H. Store the result at 3000:0003H.   4

OR

(P) Draw timing diagram of memory read operation in minimum mode and explain.   6

(Q) Classify the following instructions in various groups :

  (i) MOV [0300], AX   (ii) PUSH SI

  (iii) XOR BL, CL   (iv) ADDCL, [BP]   4

(R) State the difference between MUL CX and IMUL CX instruction.   2

EITHER

4. (A) Explain various flags of 8051 microcontroller.   8

  (B) Explain interrupts of 8051 microcontroller with the order of priority.   4

OR

(P) Draw and explain block diagram of 8051 microcontroller.   8

(Q) Explain Internal RAM of 8051 microcontroller.   4

EITHER

5. (A) Explain various addressing modes of 8051 microcontroller with example.   8

  (B) Explain the following instructions of 8051 microcontroller :

  (i) RRCA   (ii) MULAB

  (iii) SWAPA   (iv) ADDCA, RI   4

OR

(P) Write a program with flow chart to add 16-bit data. Two numbers are 1524 H and 2153 H. Store the result of addition in the DPTR register.   6

(Q) Explain any three instruction of data transfer operation of 8051 microcontroller.   6

EITHER

6. (A) Explain with diagram interfacing of RS 232 with 8051 microcontroller.   7

  (B) Explain the working of PCON register with suitable diagram.   5

OR

(P) Differentiate between idle mode and power down mode of 8051 microcontroller.   6

(Q) Explain with suitable diagram interfacing of DAC with 8051 microcontroller.   6

EITHER

7. (A) Draw block diagram of AVR AT mega 32A and explain each block.   7

  (B) Explain I/O memory of AVR.   5

OR

(P) Explain various power saving mode of AVR AT mega 32A microcontroller.   7

(Q) Explain EEPROM data memory of AT mega 32A microcontroller.   5