AS–1488

B.Sc. (Part—III) Semester—VI Examination

ELECTRONICS

(Advanced Microprocessor and Microcontroller)

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) Question No. 1 is compulsory.

(2) Draw neat diagrams wherever necessary.

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

(i) Full deplex mode allows data communication in _____ directions.

(ii) 8086 µp has _____ segment registers.

(iii) Majority of registers in AVR are _____ bit.

(iv) The instruction MOV AX, BX uses _____ addressing mode. 2

(B) Choose the correct alternative :—

(i) The 8051 has ____ bytes of on chip RAM and _____ of on chip ROM.

(a) 256, 4 KB (b) 128, 4 KB

(c) 64, 2 KB (d) 128, 8 KB

(ii) The 8086 µp is a _____ bit processor.

(a) 32 (b) 64

(c) 8 (d) 16

(iii) IP stands for _____ .

(a) Initial Pointer (b) Interrupt Pointer

(c) Instruction Pointer (d) Immediate Pointer

(iv) MOV A, # 44 instruction uses _____ addressing mode.

(a) Register (b) Register indirect

(c) Direct (d) Immediate 2

(C) Answer in one sentence only :—

(i) Define microcontroller.

(ii) What is simplex data transfer ?

(iii) State index registers of 8086 µp.

(iv) What is the function of carry flag in 8051 ? 4

EITHER

2. (A) Draw the functional block diagram of 8086 microprocessor and explain the function of BIU and EU. 8

(B) Explain the function of SP and BP in 8086 µp. 4

OR

(P) Draw and explain the function of each flag in the status flag register of 8086 µp. 8

(Q) Explain the function of each memory segment in 8086 µp memory. 4

EITHER

3. (A) What is addressing mode ? Explain Register, Immediate and direct addressing with example. 8

(B) Write a program two add two 16-bit numbers 3333H and 4444H and store the result at offset 0300H. 4

OR

(P) Draw and explain timing diagram for minimum mode memory read cycle. 8

(Q) Explain MUL CX and IMUL CX instructions of 8086 µp. 4

EITHER

4. (A) Draw block diagram of 8051 microcontroller and explain the function of each block. 8

(B) State the important features of 8051. 4

OR

(P) Draw and explain flag register of 8051 microcontroller. 6

(Q) Explain the function of DPTR and PC in 8051 microcontroller. 3

(R) How many interrupts are provided in 8051 microcontroller ? List them with order of priority. 3

EITHER

5. (A) Explain any three addressing modes of 8051 with example. 6

(B) Write an ALP for the addition of two 8-bit numbers 75H and 57H for 8051 microcontroller. 3

(C) Explain MUL AB instruction of 8051. 3

OR

(P) Draw a flowchart and write an ALP to divide FBH by 12 H. Store quotient in register R_6 and remainder in R_5. 6

(Q) Explain SUBB A, # FOH instruction of 8051. 3

(R) State addressing mode of the following instructions :—

(i) MOV R_0, FOH

(ii) MOV DPTR, # 1441 H

(iii) MOV A, @ R_0. 3

EITHER

6. (A) Explain interfacing of RS 232 with 8051 using MAX 232 chip with suitable diagram. 6

(B) How will you interface ADC with 8051 ? Explain with diagram. 6

OR

(P) Explain simplex, half duplex and full duplex modes of data communication. 6

(Q) Explain idle and powerdown mode of 8051. 6

EITHER

7. (A) Draw the block diagram of AVR AT mega 32 and explain the function of each block. 8

(B) Explain X-register, Y-register and Z-register used in AVR AT mega 32 A. 4

OR

(P) What are power saving modes available in AVR ? Explain. 6

(Q) What is data memory and program memory ? Explain AVR data memory. 6

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