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Sr. No. of Question Paper : 780 G Your Roll No.....

Unique Paper Code : 234502

Name of the Paper : Microprocessors (CSHT-512)

Name of the Course : **B.Sc. (H) Computer Science**

Semester : V

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **all** questions from **Section A**.
3. Attempt any **four** questions from **Section B**.
4. Attempt all parts of a question together.

Section A

1. (a) The segment register holds the value FA00H. Identify the starting and the end address of the memory area it identifies, in the real mode of memory addressing. (2)
- (b) Differentiate between real and protected mode of memory addressing. (3)
- (c) Explain the difference between the maximum and the minimum modes of the 8086/8088 microprocessors. (3)
- (d) Identify the addressing modes of the following : (3)
 - (i) MOV ARY, AL
 - (ii) MOV AX, BX
 - (iii) MOV DX, [EBP]

P.T.O.

- (e) What is the difference between STOS and MOVS instructions ? (3)
- (f) What are the special functions associated with register CX ? (3)
- (g) Memory devices have data lines 8 bit wide but the 8086 has 16 bit data lines. How is this mismatch overcome ? (3)
- (h) Differentiate between isolated and memory mapped I/O. (3)
- (i) What are the different modes of I/O in which the 82C55, the peripheral programmable interface, can be programmed ? (3)
- (j) Explain the BOUND and INTO interrupt instructions. (3)
- (k) What are the signals that are exchanged between the microprocessor and the DMA controller just before the DMA takes over control. Explain this exchange. (3)
- (l) What is the purpose of S, C and T FLAG bits ? (3)

Section B

- 2. (a) Explain the functions of the following pins of 8086: READY, ALE, DEN, RESET and HOLD. (5)
 - (b) What are program invisible registers ? What is the purpose of GDTR and IDTR ? (5)
3. (a) In each of the given instructions, determine the memory address accessed in the real mode. Given :
- CS=2000H; DS=F000H; ES=3000H; SS=0000H; BX=1100H;
BP=0010H; SI=003FH; ARRAY = 4444H;
- (i) MOV CX, [SI]

- (ii) DEC [BX]
 - (iii) MOV DX, [BP+SI]
 - (iv) MOV CX, [BX+SI+AAH]
 - (v) MOV AX, ARRAY (5)
- (b) How do the CALL and RET instructions affect the stack ? Explain with example. (5)
4. Write the function of the following instructions : (10)
- (i) XLAT
 - (ii) LDS
 - (iii) OUTS
 - (iv) SAHF
 - (v) XCHG
5. (a) Give three software commands to control the operation DMA 8237. (5)
- (b) Sketch the read bus cycle for the 8086/8088 microprocessor. Identify the purpose of each clocking period in this bus cycle. (5)
6. (a) Why are interrupts needed ? Differentiate between INTR and NMI. (5)
- (b) Describe the initialization command words ICW1 and ICW2 for 8259A, programmable interrupt controller. (2)
- (c) What is the BIST in the Pentium ? (3)
7. (a) Explain the difference between :
- (i) Near and far jump
 - (ii) INS and OUTS (5)

(b) What is wrong with the following instructions :

(i) PUSH AL

(ii) MOV CS, [SI]

(iii) MOV [AX], AH

(iv) POP SS

(v) POP 9000H

(5)