[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4548 **G**

Unique Paper Code : 32347504

Name of the Paper : Microprocessor

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

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) Consider the segment and offset addressing scheme. Find the unknown values for each of the following physical addresses :

P.T.O.

(i) F000H : ABCDH = ?

(ii) ? : FFFFH = D0FFFH

(b) What are the default segment registers assigne to DI and BP registers?

(c) In 8086 microprocessor, in which memory bani odd addresses are stored? Which 8086 pin is usec to enable this bank of memory? (3)

(d) Why the demultiplexing of the buses (address and data bus) are required on 8086/8088 microprocessor? Why not leave the buses multiplexed? (3)

(e) What is the purpose of Auxiliary carry flag bit? Name the arithmetic operations that set this flag bit. (3)

(f) Given DS = 1211H, SS=1000H, BX = 0140H, DI = 3000H, ARRAY = 1110H. Determine the

data addressing mode and the effective address for each of the following instructions assuming real mode memory addressing :

(i) MOV BX, [2200H]

(ii) MOV CX, [BL+4]

(iii) MOV CX, [EBX+2*EDI]

(iv) MOV DX, [BP-100H] (4)

(g) Explain the four types of Bit Test instructions: BT, BTC, BTR, and BTS. (4)

(h) Explain following string instructions, with an example : (4)

(i) MOVSD

(ii) LODSW

(i) Develop a far procedure that copies contents the word sized memory location CS : DATA1 in AX,BX,CX,DX and SI.

(j) Name the Type of Interrupt for the followin cases :

(i) Two interrupts occur at the same time.

(ii) A logic 1 placed on NMI input pin of the microprocessor.

(iii) When an instruction mentions an invalid opcode?

(iv) When the overflow condition exists?

(v) The protected mode P bit (P = 0) in a descriptor indicates that the segment is not present or not valid.

SECTION B

2. (a) Draw the descriptor format of 80386 microprocessor and explain. (5)

(b) Given the contents of sources as TEMP = 01H, BX = 0011H, EAX = 09876543H; find the content of destination register after executing each of the following commands : (5)

(i) MOVZX EBX, TEMP

(ii) MOVSX CX, BL

(iii) BSWAP EAX

(iv) MOV ECX, 44H

(v) XCHG AX, BX

3. (a) Explain the function of the following pins of 8086 microprocessor. (4)

(i) ALE

(ii) $DT/\overline{R}$

(iii) $M/\overline{IO}$

(iv) $\overline{TEST}$

(b) How does the CALL instruction differ from th JMP instruction? Explain the working of Far JM instructions using an example. (6

4. (a) Design a decoder circuit to map F0000H-FFFFF on 8K × 8 memory. (4

(b) Explain the following Data addressing mode with an example

(i) Base-plus-index addressing

(ii) Scaled-index addressing (6)

5. (a) List any four conditional jump instructions which follow the comparison of unsigned numbers. (4)

(b) Explain operation of the 8255 programmable peripheral interface. (6)

6. (a) Draw and explain the format of Command Register of DMA Controller. (5)

(b) Describe the initialization control words (ICW's) of Programmable Interrupt Controller 8259A. (5)

7. (a) Describe the operation of the following units of Pentium Pro microprocessors with the help of diagram :

(i) Retire Unit

(ii) Dispatch and Execute Unit (4)