21222

3 Hours / 70 Marks   Seat No.

15 minutes extra for each hour

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following :**   **10**

(a) Draw the labelled format of 8086 flag register.

(b) State any two difference between TEST and AND instructions.

(c) State the function of editor and assembler.

(d) Write any two difference between NEAR and FAR procedure.

(e) Write an ALP to add two 8 bit numbers.

(f) Define immediate addressing mode with suitable example.

(g) State the use of DAA instruction in BCD addition.

2. **Attempt any THREE of the following :**   **12**

(a) Describe the directives used to define the procedure with suitable example.

(b) Write the function of following pins of 8086 :

   (i) $\overline{\text{BHE}}$

   (ii) ALE

   (iii) READY

   (iv) RESET

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(c) Describe any four assembler directives with suitable example.

(d) Describe DAS instruction with suitable example.

3. **Attempt any THREE of the following :** 12

(a) Describe memory segmentation in 8086 with suitable diagram.

(b) Write an ALP to multiply two 16 bit signed numbers.

(c) Write an ALP to count odd numbers in the array of 10 numbers.

(d) Write a MACRO to perform 32 bit by 16 bit division of unsigned numbers.

4. **Attempt any THREE of the following :** 12

(a) Describe how 20 bit Physical address is generated in 8086 microprocessor with suitable example.

(b) Write an ALP to find largest number in the array.

(c) Write an ALP to count number of '0' in 8 bit number.

(d) Write an ALP to subtract two BCD number using procedure.

(e) Describe re-entrant and recursive procedure with suitable diagram.

5. **Attempt any TWO of the following :** 12

(a) Calculate the physical address if :

   (i) CS = 1200H and IP = DE00H

   (ii) SS = FF00H and SP = 0123H

   (iii) DS = 1F00H and BX = 1A00H for MOV AX, [BX]

(b) Describe how an assembly language program is developed and debugging using program developments tools.

(c) State the addressing mode of following instructions :

   (i) MOV AX, 3456H

   (ii) ADD BX, [2000H]

   (iii) DAA

   (iv) MOV AX, [Si]

   (v) MOV AX, BX

   (vi) SUB AX, [BX + SI + 80H]

6.   **Attempt any TWO of the following :**   **12**

(a)   Describe how string instructions are used to compare two strings with suitable example.

(b)   Write an instruction to perform following operations :

(i)   Multiply BL by 88H

(ii)   Signed division of AL by BL

(iii)   Move 4000H to DS register

(iv)   Rotate content of AX register to left 4 times.

(v)   Shift the content of BX register to right 3 times.

(vi)   Load SS with FF00H.

(c)   Write an ALP to concatenate two strings.

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