

22415

23124

3 Hours / 70 Marks

Seat No.

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- 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) State the use of $MN/\overline{MX}$ and Test signal.
- (b) List Assembly Language Programming tools.
- (c) Write any four bit manipulation instructions of 8086.
- (d) What is the use of AAM instruction with suitable example ?
- (e) Give any two advantages of pipelining in 8086.
- (f) Draw the format of flag register of 8086.
- (g) Define procedure and write its syntax.



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

- (a) Describe the function of the following instructions :
 - (i) DAA
 - (ii) CMP
 - (iii) ADC
 - (iv) JNC
- (b) Explain Re-Entrant and Recursive Procedure with diagram.
- (c) Write the function of following pins of 8086 :
 - (i) READY
 - (ii) ALE
 - (iii) $\overline{\text{TEST}}$
 - (iv) $\overline{\text{DEN}}$
- (d) Draw and explain model of Assembly Language Programming.

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

- (a) Describe memory segmentation in 8086 and list its advantages.
- (b) Write an ALP to perform addition of two 16 bit BCD numbers.
- (c) Write an ALP to find largest number in array of 5 elements.
- (d) Describe CALL and RET instructions with example.

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

- (a) Differentiate between Procedure and Macros.
- (b) Write an ALP to find length of string.
- (c) Explain the following assembler directives :
 - (i) DB
 - (ii) SEGMENT
 - (iii) DUP
 - (iv) EQU

- (d) Write an ALP to count number '1' in 8 bit number.
- (e) Explain any four Addressing Modes of 8086.

5. Attempt any TWO of the following :

12

- (a) Define Logical and Effective address. Describe how 20 bit Physical address is generated in 8086. If CS = 348AH and IP = 4214H, calculate the Physical Address.
- (b) Select the instructions for each of the following :
 - (i) Multiply AL by 05H
 - (ii) Move 1234H in DS register
 - (iii) Add AX with BX
 - (iv) Signed Division of AX by BL
 - (v) Rotate the contents of AX towards left by 4 bits through carry
 - (vi) Load SP register with FF00H.
- (c) Write an ALP for concatenation of two strings. Draw flow chart and assume suitable data.

6. Attempt any TWO of the following :

12

- (a) Draw the functional block diagram of 8086 with all labels.
 - (b) Explain with example any three Shift and any three Rotate instructions.
 - (c) Write an ALP for $Z = (P + Q) * (R + S)$ using MACRO. Draw flow chart of the same.
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