



P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belagavi)
Fourth Semester, B.E. - Information Science and Engineering
Semester End Examination; May/June - 2018
Microprocessor

Time: 3 hrs

Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

- 1 a. Explain the flag register of 8086. Find the status of all conditional flags when the following operations are performed : 10
- i) 7D65H + 4356 H ii) 4538H - 2345H
- b. Explain the following instructions with example : 10
- i) IMUL ii) DIV iii) XLAT iv) LEA v) LDS
- 2 a. Suppose DS = 9854H, SS = 7896H, SI = 67H, BX = 98H, BP = 87H. Find the addressing mode and physical address generated for the following instructions : 10
- i) MOV AX, [1345 H] ii) MOV [BX+67 H], DL iii) MOV CL, [BP+DI]
- iv) MOV CH, DH v) MOV DI, 8563H
- b. Explain the internal architecture of 8086 microprocessor with a diagram. 10

UNIT - II

- 3 a. Explain Shift and Rotate instruction. Illustrate how shift instructions can be used in multiplication and division with example. 12
- b. Write an assembly language program to find minimum element in an 8 bit signed array. 8
- 4 a. Explain the difference between the following instructions with example : 9
- i) TEST and AND ii) SAR and SHR iii) JA and JG
- b. Explain the directives EXTRN and PUBLIC with example. 6
- c. Write an assembly language program of 8086 to find number of even and odd elements in a given 8-bit array. 5

UNIT - III

- 5 a. With example program, explain the difference between MACRO and PROCEDURE. 10
- b. Write a procedure to find factorial of the number in AL register. 5
- c. Explain the stack instruction. Also mention how stack is used in procedures. 5
- 6 a. Write an assembly language program to sort given array. 10
- b. Explain how interrupts are handled in 8086 processor. 10

UNIT - IV

- 7 a. Write an assembly language program to check whether the two given strings are equal or not. 10

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- b. Explain the following :
 - i) Programmed I/O 10
 - ii) Interrupt I/O
- 8 a. Explain the following instructions :
 - i) SCAS ii) CMPS 8
 - iii) LODS iv) STOS
- b. Explain the fundamental I/O considerations. 12

UNIT - V

- 9 a. Explain the minimum mode operations in 8086 based system. 10
- b. Explain the read and write timing diagram of 8086. 10
- 10 a. Explain Interrupt priority controller 8259A with neat diagram. 14
- b. Explain the following pins of 8086 :
 - i) ALE
 - ii) Ready 6
 - iii) $\overline{\text{TEST}}$

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