



## 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; June - 2017**

**Microprocessor**

*Time: 3 hrs*

*Max. Marks: 100*

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

### UNIT - I

- 1 a. What is the maximum internal clock frequency of 8086 and how is clock signal generated in 8086? Illustrate the use of XLAT instruction with a code to convert BCD to Excess-3 10
- b. Define addressing mode. Explain Direct addressing mode and Implied addressing modes with example. 10
- 2 a. Write the special functions carried by the general purpose registers of 8086. If the value of flag register is ODD5h find the values of parity and interrupt flag. If SI = 0100h, DS = 3000h, BX = 0050h, find the addressing modes and generate physical address for the instructions MOV CL, BX[SI] and MOV CX, BX[SI+4]. 10
- b. Find the validity of instructions and give reason if invalid: 8
- add 24h[si], ax
- mul al, bl
- in dx, al
- mov al, offset arr
- xchg al, 5ah
- c. MOV AX, 00CBh 2
- MOV BL, 4
- DIV BL
- Analyse the given code and write the contents of AL and AH after the execution of DIV BL.

### UNIT - II

- 3 a. Explain the assembler directives PUBLIC, ASSUME, ENDP and EQU. Write the value in register AL and Carry flag, after the execution of these two instructions: 10
- MOV AL, E0h      SAR AL, 1
- b. Write an assembly language program to check whether the given number is ODD or EVEN and to display appropriate message. 10
- 4 a. Explain with example Shift and Rotate instructions. Write an assembly language program to find the factorial of a given number. 10
- b. Write a program to sort the given array using bubble sort. 10

**UNIT - III**

- 5 a. Differentiate between intra-segment call and inter-segment call. Explain the following instructions: 10
- i) LOOP      ii) IRET      iii) CALL      iv) JCXZ.
- b. Write a procedure to search an element in a given array using linear search. 10
6. a What is recursive procedure? Explain different parameter passing techniques in 8086 procedures. 10
- b. Write an ALP for 8086 to read a character from a keyboard until an enter key is pressed. Display the same characters on the screen. Use macros to read and write. 10

**UNIT - IV**

- 7 a. Write two procedures one to accept a string and other to display a string. Using these write a program to reverse a given string. 12
- b. What are interrupts and interrupt vector table? What are the steps involved in handling interrupts? 8
- 8 a. Explain the sources from which 8086 processor can receive interrupts. 12
- b. Write a program to count the frequency of occurrence of a given character 'w' in a string. 8

**UNIT - V**

- 9 a. With a block diagram, explain the working of 8259 programmable Interrupt controller. 10
- b. With a neat timing diagram, explain read and write operation of 8086. 10
- 10 a. Explain the function of the following pins with respect to 8086processors. Also write the mode in which it belongs to: 10
- i) QSO      ii) READY      iii)  $\overline{RD}$       iv)  $\overline{DT}/\overline{R}$ .
- b. Explain Minimum mode operation of 8086. 10

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