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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Computer 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 with figure the flag register of 8086. 8

b. Interpret the addressing mode in the following instructions and compute physical address.
Given: DS = 1000 h; bx = 3459h; SS = 5CF9h; BP = C396h; Si = 1004h 6
i) mov ax, [BP] ii) add cl, [bx +Si] iii) add 5167h[bx+Si], al

c. Explain the working of instruction queue of 8086. 6

2 a. Define addressing mode. Explain any two memory related data addressing mode and any two branch related addressing mode. 8

b. Construct machine code for the following : 6
i) add ax, cx ii) add 79h[bx], cl iii) add dx,[bx+Si]

c. Explain special one bit indicators presents in the instruction format. 6

UNIT - II

3 a. Apply bubble sorting technique to sort *n* bytes of data in descending order using assembly level programming. 6

b. Explain the following instructions along with an example, allowed addressing mode and flags that are affected after the execution of an instructions: 8
i) ADC ii) SAR iii) loop iv) AND

c. Data set of 15 readings are stored at consecutive location starting from 9000h. Develop a program to check whether readings are +ve or –ve. Neglect all –ve readings and add all +ve readings. 6

4 a. Explain the following instructions with an example : 8
i) CBW ii) CLI iii) EQU iv) SHR

b. Develop a program to convert decimal number to binary. 6

c. Write a sequence of instructions to perform the following on the content of any 16 bit register 6
i) Clear 3rd and 5th bit and set10th bit
ii) To set the trap flag
iii) Set bit 0, 2 bits and change 6th and 11th bits

Contd…2

UNIT - III

5	a.	Discuss the reasons for breaking a program into small parts.	4
	b.	Explain public and extrn directive along with an example.	6
	c.	Write a program to find ${}^{n}c_{r}$ using recursive procedures.	10
6	a.	Distinguish between procedure and macro.	5
	b.	Write a macro to add two numbers. Using this write a program to add *n* bytes of data.	8
	c.	Define interrupt. Explain the sequence of instructions to be executed at the time of interrupt, also find address into IVT after the execution of the INT 40h Instruction.	7

UNIT - IV

7	a.	Explain the following instruction : i) CMPS ii) SCAS iii) LODS	6
	b.	Develop a program to accept a string from keyboard and check whether it is palindrome or not. If yes store *ff* else store 00 at location result.	10
	c.	With an example explain XLAT instructions.	4
8	a.	Explain in and out instruction format.	5
	b.	Explain with figure priority management hardware.	10
	c.	Explain the sequence of steps occurs during block input byte transfer.	5

UNIT - V

9	a.	Explain the functions of following pins : i) HOLD ii) ALE iii) NMI iv) AD_0 - AD_{15} v) $DI / \overline{R}$	10
	b.	Explain with figure maximum mode operation of 8086 processor.	10
10	a.	Explain interrupt system based on single 8259A.	10
	b.	Design an interface between 8086 CPU and two chips of 16k x 8 EPROM and two chips of 32k x 8 RAM. Select the starting address of EPROM at F8000h and RAM address must start at 00000h	10

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