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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

July / August 2016 Supplementary Examination

Course Microprocessors **Duration: 3 hrs.**

Course Code: 09CI3GCMPL **Max Marks: 100**

Date:01.08.2016

Instructions:. 1. Answer FIVE Full questions choosing one from each unit.
2. Missing data if any may be suitably assumed.

UNIT - I

1. a) Explain the segment registers, memory segmentation and their purpose in the operation of the 8086 microprocessor. 08

   b) If the 8086 execution unit calculates an effective address of 14A3H and data segment contains 7000H, what physical address will the BIU produce? 04

   c) Explain the following addressing modes of 8086 microprocessor with examples. 08
   i) Implicit addressing mode
   ii) Immediate addressing mode
   iii) Memory direct addressing mode
   iv) Memory indirect based indexed addressing mode

UNIT - II

2 a What are assembler directives? Write the functionality of the following assembler directives. 8
i)EVEN ii) OFFSET iii)EQU

b Write an assembly language program to find the smallest even number in a given array. 6

c Calculate the COUNT to generate a delay of 5milliseconds using 8086 microprocessor with a 5MHz clock in the following assembly language code .Assume the clock cycles for mov is 4, for nop is 3,for inc is 2 and for loop it is 17 or 5 based on successful looping or not. 6

```
MOV CX, COUNT
AGAIN:INC AX
NOP
LOOP AGAIN
```

UNIT - III

3 a Explain the difference between the MACRO and PROCEDURE with suitable ALP. 6

b Write an ALP to find first 10 numbers in Fibonacci series using 8086 instructions. 6

c Write an ALP to check given string in palindrome or not using 8086 instructions. 8

OR

4	a	Explain stack operations with neat sketch	8
	b	Differentiate between memory mapped I/O and I/O mapped I/O.	4
	c	Write ALP to check equality of two strings.	8

UNIT - IV

5	a	With a neat diagram explain the maximum mode operation of 8086 with pin description.	8
	b	Give the general instruction template for MOV instruction. Write the machine code for following instructions i)MOV BX,1234H ii)MOV ES:FF,BL iii)MOV BX,[BP+0FAH]	8
	c	Write the timing diagram for memory read cycle	4

UNIT - V

6	a	Explain with a neat diagram the internal block diagram of 8255 and explain their operating modes.	10
	b	Design a scheme to interface an 8x3 bit push button Keyboard and a 7 segment LED display to 8086, using a 8255 interface chip.	10

OR

7	a	Interface a stepper motor to 8086 using suitable connections. Write an ALP such that the motor must rotate in anticlockwise direction for specified number of steps.	10
	b	Interface a DAC to 8086 microprocessor. Write an ALP to generate a rectangular waveform using DAC.	10

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