P13CS46 Page No 1
P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Fourth Semester, B.E Computer Science and Engineering Semester End Examination; June/July - 2015
Microprocessor
Time: 3 hrs Max. Marks: 100
<i>Note</i> : Answer <i>FIVE</i> full questions, selecting <i>ONE</i> full question from each <i>Unit</i> . UNIT - I
a. With a neat diagram, explain the internal architecture of the 8086 microprocessor.
b. Explain the conditional flags of 8086 microprocessor with an example.
c. Determine the memory address of the instruction to be executed by the microprocessor for the
following CS: IP combinations;
i) $CS = 1000H$ and $IP = 2000H$ ii) $CS = 3456H$ and $IP = ABCDH$
a. Discuss the following addressing modes with examples:
i) Direct ii) Immediate iii) Register
iv) Register relative v) Based Indexed
b. Determine the machine code for the following instructions:
i) MOV BP, SP ii) MOV DL, [DI] [OPCODE FOR MOV IS 100010]
c. Determine the execution time of the following instructions assuming the clock has a frequency of 5 MHz:
frequency of 5 MHz; i) Add register to register
ii) Add memory to register using based indexed relative addressing (Both even and odd
address)
UNIT – II
a. Explain the general format of an assembler instruction with an example.
b. Explain the following instructions with an example:
i) LEA ii) ADC iii) LOOP iv) ROL
c. Write a program using 8086 instructions to find the largest of two numbers.
a. Define Assembler directives. Explain the following directives with an example:
i) DB ii) STRUC iii) SEGMENT iv) EVEN
b. Write a program to search a key element in a list of n numbers, using binary search algorithm.
UNIT - III
a. What is modular programming? Mention its advantages.
b. What is stack? What is the use of stack memory? Explain the push & Pop instructions.
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P	13CS46 Page No 2		
d.	Write a code needed to store and restore the contents of general purpose registers within the procedure.	4	
6 a.	Write a recursive procedure to calculate the factorial of an integer n.	6	
b.	Explain the use of INTn instruction for debugging a program.	4	
c.	What is Nested macro? Explain with an example.	10	
UNIT - IV			
7 a.	Explain the following with an example:	10	
	i) MOVS ii) CMPS iii) LODS iv) SCAS v) REP	10	
b.	Write a program to read a string and check whether it is palindrome or not.	10	
8 a.	Explain IN and OUT instructions with an example.	4	
b.	Explain the sequence of events that occur when I/O is handled by the operating system.	6	
c.	With a neat diagram, explain programmed I/O transfer.	10	
UNIT -V			
9 a.	Briefly explain the functions of the following pins of 8086 microprocessor:	_	
	i) ALE ii) $MN \overline{MX} $ iii) INTR iv) NMI v) READY vi) CLK vii) RESET	7	
b.	With a neat diagram, explain 8284A clock generator.	7	
c.	Draw and explain the timing diagram for an interrupt acknowledgement.	6	
10a.	Explain with a neat diagram, the organization of 8259A programmable Interrupt controller.	10	
b.	Explain the initialization command words (ICWs) of 8259A.	8	
c.	Write a sequence of code for setting the contents of ICW's, which assumes that the even address of 8259A is 0080h.	2	

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