C   C7049

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017
Course Code: AE305
Course Name: MICROPROCESSORS & MICROCONTROLLERS (AE)

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.
Marks

1	a)	Draw and explain the functional units of 8086 processor.	(7)
	b)	What are the difference between minimum and maximum mode of 8086?	(4)
	c)	What are interrupts and interrupt service routine?	(4)
2	a)	What do you mean by a macro? What are the differences between a macro and a subroutine.	(5)
	b)	What are assembler directive? Explain about the ASSUME, EQU, DD and PUBLIC assembler directives.	(6)
	c)	What are the advantages using segment registers?	(4)
3	a)	What are the instructions associated with stack in 8086? Explain each with example.	(6)
	b)	Draw the memory read cycle timing diagram in maximum mode.	(5)
	c)	Explain the mechanism to generate the control signals.	(4)

PART B
Answer any two full questions, each carries 15 marks.

4	a)	Give a brief description of the special features of Pentium processor.	(4)
	b)	Draw the architecture of 8087 and explain.	(6)
	c)	Draw the superscalar architecture of Pentium	(5)
5	a)	Explain real mode and protected mode of operation in 80386.	(5)
	b)	How would you explainprocedure for interfacing RAM with 8086.	(5)
	c)	Explain the structure of descriptor in 80386.	(5)
6	a)	Draw and explain the interface between 8086 and 8087.	(5)
	b)	Explain the branch prediction logic in Pentium.	(5)
	c)	Draw and explain the bit functions of status register in 8087.	(5)

PART C
Answer any two full questions, each carries 20 marks.

7	a)	Discuss the advantages of microcontroller based systems over microprocessor based systems.	(4)
	b)	Discuss the addressing modes of 8051 with two instruction examples each.	(8)
	c)	What are timers? Explain timer modes of operation in 8051.	(8)
8	a)	Draw and explain theinternal architecture of 8051.	(8)
	b)	What is meant by interrupt priority? Give the priority of interrupts in 8051. How we can program the priority?	(4)

    c)   Write an ALP to find the second smallest number in an array.   (8)
         The array is stored in memory starting from 2400H. The first element of the array gives the count value for the number of elements in the array. Store the result in 2500H.

9   a)   How does 8051 differentiate between internal and external program memory and   (5)
         explain the memory organization of 8051.

    b)   Discuss the following 8051 instruction   (5)
         (i)MOVX A,@DPTR (ii) AJMP L1 (iii) SUBB A,R0 (iv) MUL AB

    c)   Write an assembly language program to generate a square wave of 50 Hz with   (10)
         75% duty cycle using Timer 0 in mode 1. on port pin p3.0.(assume X TAL = 12 MHz).

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