C R5965 Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: CS305

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1 How does the 8086 processor access a word from an odd memory location? Howmany memory cycles does it take? (3)

2 Find the physical address of the destination operands referred in the following instructions, if DS=0223H, DI=0CCCH and SI=1234H (3)
a) MOV [DI], AL
b) MOV [SI][56H], BL

3 What is the difference in the execution of an 8086 inter-segment and intra-segment CALL instruction? (3)

4 Define the functions of the following 8086 assembler directives: (3)
a) ASSUME b) EQU c) OFFSET

PART B

Answer any two full questions, each carries 9 marks.

5 Draw the Memory Read timing diagram of 8086 in Minimum mode. Describe the status of the relevant signals during each clock period. (9)

6 Explain the addressing modes supported by 8086 with one example for each. (9)

7 Write an 8086 assembly language program to find the count of even and odd numbers from a set of 10 sixteen bit numbers stored in location staring from a known address. Store the results in two different locations. (9)

PART C

Answer all questions, each carries 3 marks.

8 Write the condition(s) which cause 8086 to perform a Type 1, Type 2 and Type 3 interrupts. (3)

9 Discuss 8086 interrupt acknowledgement cycle. (3)

10 Differentiate between I/O mapped I/O and memory mapped I/O. (3)

11 Write short notes on scanned keyboard mode with 2-key lockout of 8279 keyboard/display controller. (3)

PART D

Answer any two full questions, each carries 9 marks.

12 Draw the architectural block diagram of 8259 Programmable Interrupt Controller and explain the role of each functional part. (9)

13 a) What do you mean by Interrupt Vector Table (IVT)? The starting address for a type 7 interrupt-service procedure is 1112:1314. Show where and in what order this address should be placed in the 8086 IVT. (5)

b) Briefly describe the control word format of 8255 PPI. (4)

14 Design an interface between 8086 CPU and two chips of 16 x 8 EPROM and two chips of 32K x 8 RAM. Select the starting address of EPROM suitably. The RAM address must start at 00000H. (9)

PART E

Answer any four full questions, each carries 10 marks.

15	a)	Discuss the selection criteria of a typical microcontroller.	(4)
	b)	Explain about the programmable I/O ports of 8051 microcontroller.	(6)
16	a)	How the 8051 differentiate between internal and external program memory?	(1)
	b)	Discuss the structure of internal data memory (RAM) of 8051.	(5)
	c)	What is the size of 8051 Stack Pointer (SP)? Discuss the operation of 8051 stack.	(4)
17	a)	Describe the program status word (PSW) of 8051.	(3)
	b)	How many interrupts have been provided in 8051? Explain the necessary conditions which cause these interrupts to be generated. Also arrange them in the decreasing order of priority.	(7)
18		Describe the addressing modes of 8051 with one example for each.	(10)
19	a)	What is the difference between LCALL and ACALL instructions?	(2)
	b)	Write an 8051 assembly language program to find the largest of ten numbers stored in RAM location 47H onwards. Output the result in port1.	(6)
	c)	Is "DIV A, R1" a valid instruction? Justify your answer.	(2)
20		Explain the architecture and modes of operation of 8254/8253 programmable Timer/ Counter with necessary diagrams.	(10)

****