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1100CST307122103

Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (R, S) / S3 (PT) (R, S) Examination December 2023 (2019 Scheme)

Course Code: CST 307

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1		List any three features of 8085.	3
2		Describe the functions of following signals in 8086 microprocessor: (i) ALE (ii) BHE	3
3		Explain the functions of the following 8086 instructions: (i) LOOP (ii) XCHG (iii) STC	3
4		Specify the use of the assembler directives: (i) EQU (ii) ENDP	3
5		Distinguish between maskable and non-maskable interrupts.	3
6		List the features of 8259 (Programmable Interrupt Controller).	3
7		Give the purposes of the signals DRQ, TC, MARK of 8257 (DMA Controller).	3
8		List the features of 8254 Programmable Interval Timer.	3
9		Differentiate MOV, MOVC, MOVX instructions of 8051 microcontroller.	3
10		Describe internal memory organization of 8051 microcontroller.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	Describe maximum mode configuration of 8086.	9
	b)	Draw the architecture block diagram of 8085.	5
12	a)	Explain the physical and logical memory organization of 8086 with neat diagrams.	9
	b)	Compare the microprocessors 8086 and 8088.	5

Module -2

13	a)	Find the physical address of the memory locations referred by the following	

instructions, when DS = 2AD3H, CS=0058H, BX=0312H, SI=0058H. 4

i) MOV AL, [BX] ii) MOV [BX][SI]15H, DL

b) Explain the various addressing modes supported by 8086 instructions. 10

14 a) Write an 8086 program for finding factorial of a given number. Assume that the 4000h, and the result need to be stored at location 5000h. 5

b) Distinguish between macro and subroutine with suitable example. 9

Module -3

15 a) Interface 16Kx8 RAM using four numbers of 8Kx8 memory chips and 16Kx8 ROM using two numbers of 8Kx8 EPROM chips. The address map is given as RAM starts at 00000H and ROM ends at FFFFFH. 10

b) Describe the stack structure and operations of 8086. 4

16 a) What is an Interrupt Service Routine? 4

b) Describe the interrupt handling process in 8086 microprocessors. 10

Module -4

17 a) Explain the architecture of 8255 PPI with a neat diagram. 10

b) If the control register is loaded with 10111XXX, what is the configuration for the 8255 PPI? 4

18 a) Illustrate the role and operations of a DMA controller (8257) with neat diagrams. 8

b) Describe the data transfer modes of operations of 8257 DMA controller. 6

Module -5

19 a) Compare microprocessor with microcontroller. List the factors that affect selection of a microcontroller. 9

b) Write an assembly language program to transfer ten bytes of data from memory location 4500H to 4700H. 5

20 a) Explain the architecture of 8051 microcontroller. 9

b) Explain how external memories can be interfaced to 8051 microcontrollers. 5

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