Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2022 (2019 Scheme)

Course Code: EET 303

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Max. Marks: 100 Duration: 3 Hours

PART A

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

1	Describe multiplexing and demultiplexing process in 8085 µP	3
2	Write any thee addressing modes of 8085 µP with examples.	3
3	Write an 8085 ALP to find 2^s complement of an 8-bit number which is stored in location 2050H.	3
4	What is stack? How stack is initialised?	3
5	Distinguish between vectored and non-vectored interrupts	3
6	Write the differences between microprocessor and microcontroller.	3
7	Explain the indexed addressing modes of 8051 µC with two examples	3
8	Differentiate between CLR C and CPL C instruction of 8051 µC	3
9	Explain SCON register in 8051 µC	3
10	Indicate which mode and which timers are selected for each of the following. (a) MOV TMOD, #01H (b) MOV TMOD, #20H	3

PART B

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

Module -1

11	a)	Point out the importance of the following functional blocks of 8085Mp architecture (i) Flag flip flops (ii) Instruction decoder and machine cycle encoding (iii) Stack pointer (iv) Program counter	8
	b)	Explain the basic steps involved in reading from and writing to memory locations	6

12	a)	Draw and explain the timing diagram of OUT 00H instruction of 8085Mp	8
	b)	Discuss instruction cycle, machine cycle and T state of 8085	6

Module -2

13	a)	Two 16-bit numbers are stored in memory location 8000H onwards. Write an 8085 ALP to interchange the 16-bit numbers stored in the memory.	7
	b)	Design a delay subroutine in 8085 µP to obtain a delay of 0.1s. Assume time for 1 T-state as 320ns	7
14	a)	List the sequence of operations involved during the execution of PUSH PSW and POP PSW instructions of 8085 Mp	8
	b)	Write an 8085 ALP to save the content of accumulator and flag register to BC register pair after adding 25H and 65H.	6

Module -3

15	a)	Explain all modes of operation of 8255 PPI	8
	b)	Identify the number to be loaded in to accumulator to reset 6^{th} bit of port C of 8255PPI. Also write the ALP for the same	6
16	a)	List out the applications and challenges in Embedded Systems.	6
	b)	Draw and explain memory organisation in 8051 µC	8

Module -4

17	a)	Write an 8051 ALP to multiply A1H and B1H and store the LSB and MSB results in R_0 and R_1 registers of bank 2.	8
	b)	Explain the operation of following instructions of 8051 µC (a) DA A (b) SUBB A,@R_0 (c) ANL A, #10H	6
18	a)	Explain I/O ports and its functions in 8051 µC	6
	b)	Write an 8051 C program to get a byte of data from P0. If it is less than 100, send it to P1; otherwise, send it to P2.	8

Module -5

19	a)	Illustrates different modes of operation of timers in 8051 µC	8
	b)	Write an 8051 ALP to generate a rectangular wave of 1KHz having a duty cycle of 40% from TxD pin of 8051, using timer 1. Assume XTAL of 12 MHz	6
20	a)	Draw and explain interfacing of DAC with 8051 µC	6
	b)	i). List the interrupts in 8051 ii). Write the steps in execution of an interrupt in 8051	8

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