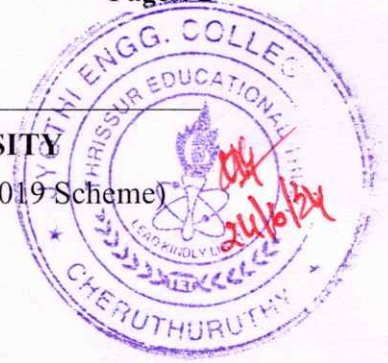Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S3 (PT) (S) Examination June 2024 (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	Explain the three basic building blocks of a micro-processor.	3
2	Differentiate between instruction cycle and machine cycle in a microprocessor-based system.	3
3	Explain the instructions used in 8085μP to implement a subroutine program.	3
4	Distinguish between CNZ 8000H and JNZ 8000H, instructions of 8085μP	3
5	Distinguish between IO mapped IO and Memory Mapped IO schemes.	3
6	Differentiate between hard and soft real time system	3
7	List out the difference between LJMP and SJMP instructions in 8051 μC	3
8	Explain data types and directives used in 8051 μC	3
9	What are the features of serial ports in 8051 μC	3
10	Find the bits of TMOD registers to operate as timers in the following modes (i) Mode 1 Timer (ii) Mode 2 Timer 0.	3

PART B

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

Module -1

11 a) Point out the important of the following pins/terms of 8085 μP   10

       1. READY **2.** ALE **3.** X_1X_2 **4.** Status signals   **5.** Control Signals

   b) Write a short note on different interrupts in 8085   4

12 a) Draw and explain the timing diagram of INX H instruction of 8085μP   6

   b) Explain different addressing modes of 8085 μP. Give 2 example for each.   8

Module -2

13 a) A,   BCD number is stored in memory location 6000H. Write an ALP to convert this number to equivalent binary form.   7

b) Analyse the content of stack pointer after the execution of CALL and RET instructions with an example   7

14 a) Explain the operation of following instructions in 8085 including number of bytes, addressing mode, machine cycle and flag status.   8

     (i)   LHLD 2000H   (ii) XCHG   (iii) DAD rp   (iv)   ANI 74

b) In a temperature control process system, after each sampling process it is required to hold the sampled value for 0.2 second. Design an 8085 ALP to obtain the required delay after each sampling.   6

Module -3

15 a) Design an interfacing circuit for one $2K \times 8$ ROM and one $4K \times 8$ RAM with 8085 microprocessor and find the memory address range   8

b) Illustrate the interfacing of 8 switches and 8 LEDs with 8085 µP and write the ALP program for the same. Assume the switches and LEDs are interfaced through port A and Port B of 8255PPI, respectively. Other port can be taken as output port.   6

16 a) List any four fields of application of embedded system   4

b) Draw and explain internal architecture of 8051 µC   10

Module -4

17 a) Write an 8051 ALP to divide two numbers and store the LSB and MSB results in R0 and R1 registers of bank 1.   6

b) Explain the addressing modes of 8051 µC with 2 examples for each.   8

18 a) Write an ALP to continuously sent out the alternate values 55H and AAH to Port 0 of 8051   6

b) Explain the characteristics of I/O ports in 8051 µC   8

Module -5

19 a) Draw and explain the format of TCON register in 8051µC   6

b) Write an 8051 ALP to generate a square wave of 1 KHz from the TxD pin of 8051, using Timer1. Assume clock frequency of 12 MHz   8

20 a) Explain serial data transfer modes of 8051µC   6

b) Draw and explain interfacing of DAC with 8051 µC   8

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