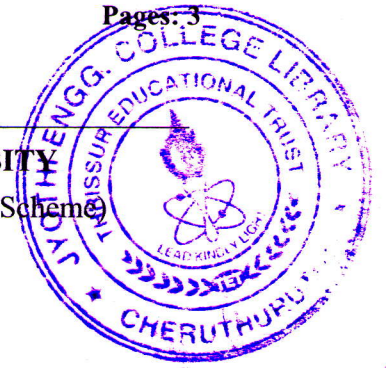Reg No.:_____　　　　　　　　Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fourth Semester B.Tech Degree Examination July 2021 (2019 Scheme)

Course Code: MRT206
Course Name: MICROPROCESSOR & EMBEDDED SYSTEMS

Max. Marks: 100　　　　　　　　　　　　　　　　　　Duration: 3 Hours

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

1	Compare microprocessor with Microcontroller.	3
2	Explain Program Counter Register used in 8085.	3
3	Explain different general-purpose registers of 8085.	3
4	What is the difference between high level programming and low-level programming? Explain with an example.	3
5	Explain Interrupt Service Routine.	3
6	Explain the Input/ Output Mode of operation of 8255 in detail.	3
7	Explain Stack Pointer used in 8085.	3
8	Recall the difference in Interrupt and polling.	3
9	Point out the different applications of 8051 Microcontrollers.	3
10	Explain the significance of 8 in an 8-bit microcontroller? Also, give example of 8-bit microcontroller.	3

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

Module -1

11	a)	Draw and explain the pin diagram of 8085 Microprocessor.	10
	b)	Explain Flag register used in 8085 in detail.	4
12	a)	Explain following instruction used in 8085.	10

　　　i.　ADD
　　　ii.　ADC
　　　iii.　ADI
　　　iv.　LXI

    v.   ANA

    vi.   RLC

    vii.   CMA

    viii.   MVI

    ix.   LXI

    x.   IN

b) Write an assembly program to do the following subtraction operation for 8085   **4**

    (2501 H) = 49H

    (2502 H) = 32H

    Stored Result (2503 H) = 49H - 32H = 17H

Module -2

13 Explain the Instruction cycle of 8085 Microprocessor and draw the timing diagram for instruction DCX SP. Determine the number of T-States required for the execution of this instruction.   **14**

14 a) Explain the Bit Set Reset (BSR) Mode of operation of 8255 in detail.   **4**

    b) Write 8085 Assembly language program for interfacing between 8085 and 8255. Here Port A and Port B are holding two values, take the numbers from port A and B, subtract B from A, and send the result at port C.   **10**

Module -3

15 a) Explain the four main steps used in Embedded Product Development Life Cycle using suitable diagrams.   **10**

    b) Write any five features of Embedded System.   **4**

16 a) Write a short note on following: **7**

      i.   Linkers

      ii.   Loaders

    b) What do you understand with real-time systems? Explain Soft real time system with at-least five examples.   **7**

Module -4

17 a) Mention the different addressing modes used in 8051 Microcontroller. Explain Direct addressing mode in detail using suitable example.   **6**

b) Assume that 5 BCD data items are stored in RAM locations starting at 40H, as shown below. Write a program to find the sum of all the numbers. The result must be in BCD.   8

40 = (71)

41 = (11)

42 = (65)

43 = (59)

44 = (37)

18 a) Explain the architecture of 8051 Microcontroller with neat diagram.   10

    b) List at least 6 Characteristics of 8051 Microcontroller.   4

Module -5

19 a) Write an 8051 C program to toggle bit D0 of the port P1 (P1.0) 50,000 times.   7

    b) Write an 8051 C program to get a byte of data form P1, wait ½ second, and then send it to P2.   7

20   A door sensor is connected to the P1.1 pin, and a buzzer is connected to P1.7. Write an 8051 C program to monitor the door sensor, and when it opens, sound the buzzer. You can sound the buzzer by sending a square wave of a few hundred Hz.   14

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