

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. 14
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.
