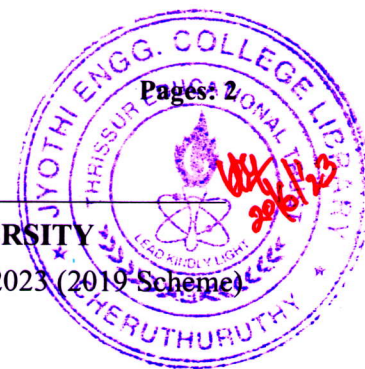


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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree Supplementary Examination June 2023 (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	List the various interrupts and its priorities in 8085 microprocessor.	03
2	Point out the steps involved to fetch a byte in 8085 Microprocessor.	03
3	List the typical characteristics of an embedded system.	03
4	Write a program using 8051 assembly language to change the data 55H stored in the lower byte of the data pointer register to AAH using rotate instruction.	03
5	Give two features that makes general purpose Microcontroller differ from an embedded processor.	03
6	Define toolchain and justify its need.	03
7	List the addressing modes of 8051.	03
8	Show the status of the CY, AC and P flag after the addition of 9CH and 64H in the following instructions. MOV A, #9CH ADD A, #64H	03
9	Point out the different types of ADC.	03
10	Identify the register used for serial programming in 8051 microcontroller.	03

PART B

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

Module -1

- 11 a) Explain the Control instructions of 8085 Processor. 07
b) Write a program using 8085 Microprocessor for addition and subtraction of two BCD numbers. 07
- 12 Draw and describe the functional block diagram of 8085. 14

Module -2

- 13 a) Explain the Instruction cycle, Machine cycle & T state with an example. 07
b) Draw the timing Diagram of I/O read operation in 8085 Microprocessor. 07.

- 14 a) Discuss the features of mode 0 and Mode 1 in 8255? 07
b) Explain the block diagram and functions of Programmable Peripheral Interface (PPI). 07

Module -3

- 15 a) Discuss in detail about the structural units in embedded processor. 07
b) Discuss the real-time requirements and characteristics of an embedded system. 07
16 a) Discuss the situations where Waterfall Model is Least appropriate? 07
b) State and explain the need of the following development tools in a microcontroller board: 07
(i) Editor (ii) Assembler (iii) Compiler (iv) Linker

Module -4

- 17 a) Explain the organization of Internal RAM and Special function registers of 8051 microcontroller. 07
b) Write an ALP in 8051 to subtract two 16 bit numbers and store result. 07
18 a) Explain the following 8051 instructions. 07
1) MOV A,@R0 2) MOVC A,A+@DPTR 2) ANL A,@R0 4) ADDC
5) CPL C
b) List out the types Of Interrupts available in 8051 microcontroller. Explain the highest priority one with an example. 07

Module -5

- 19 a) Draw the diagram to interface a stepper motor with 8051 microcontroller and Write its ALP to run the stepper motor in both forward and reverse direction with delay. 07
b) Explain RS232 serial communication interface with 8051 microcontroller with an example. 07
20 a) Write a C Program to generate the 500us time delay using TIM2(timer1 and mode2). 07
b) Write a C Program to Switch ON the LED by pressing the key '1' on the keypad. 07
