

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: EET303**Course Name: MICROPROCESSORS AND MICROCONTROLLERS**

Max. Marks: 100

Duration: 3 Hours

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

Marks

- | | | |
|----|--|-----|
| 1 | List the control and status signals of 8085. | (3) |
| 2 | Explain the operation of the following 8085 instructions: (i) DAD D (ii) INR M (iii) XCHG. | (3) |
| 3 | Define PUSH and POP instructions of 8085. | (3) |
| 4 | Calculate the loop delay if the register pair BC of 8085 microprocessor is loaded with 8000H. Assume the system clock frequency to be 3.072 MHz. | (3) |
| 5 | Explain maskable and non-maskable interrupts of 8085. | (3) |
| 6 | Distinguish between hard and soft real-time systems. | (3) |
| 7 | Explain the operation of the following 8051 instructions: (i) MOV A, @R ₁ (ii) CPL A (iii) SWAP A. | (3) |
| 8 | Define the assembler directives of 8051. | (3) |
| 9 | List the interrupts of 8051. | (3) |
| 10 | Explain the TMOD register of 8051. | (3) |

PART B*(Answer one full question from each module, each question carries 14 marks)***Module -1**

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|----|---|------|
| 11 | a) Explain the architecture of 8085 microprocessor with the help of a neat functional block diagram. | (10) |
| | b) Identify the machine cycles of the following instructions: (i) MOV B, M (ii) MVI A, 05H (iii) STA 2065H (iv) OUT 01H. | (4) |
| 12 | a) Sketch and explain the timing diagram of the instruction MOV M, A with opcode 77H stored in the memory location 4500H. | (9) |
| | b) Explain the addressing modes of 8085 with suitable examples. | (5) |

Module -2

- 13 a) Ten bytes of data are stored in consecutive memory locations starting at 2050H. (9)
With suitable explanations, write an assembly language program in 8085 to transfer the entire block of data to new memory locations starting at 2070H.
- b) The contents of accumulator and C register are 87H and 79H respectively. Find (5)
the contents of the accumulator and flags after the execution of the instruction ADD C.
- 14 a) Write and explain an assembly language program in 8085 to perform BCD to (9)
Binary conversion.
- b) Explain the significance of stack memory while executing CALL and RET (5)
instructions in 8085.

Module -3

- 15 a) Explain the interfacing of seven segment LED with 8085. (8)
- b) Draw the control word format for the I/O mode of 8255. Hence frame the (6)
control word for the following configuration in Mode 0 operation:
Ports A, B and C_L - output ports, Port C_U- input port.
- 16 a) With the help of a neat sketch, explain the register organization and SFR of (10)
8051.
- b) Differentiate between microprocessors and microcontrollers. (4)

Module -4

- 17 a) Classify 8051 instructions into various categories. Give examples for each. (8)
- b) Explain the addressing modes of 8051 with suitable examples. (6)
- 18 a) Define data types in C and explain (6)
- b) Write an 8051 C program to toggle all the bits of P0 and P2 continuously with a (8)
250ms delay.

Module -5

- 19 a) Explain SCON and SBUF registers in 8051. (7)
- b) Explain Interrupt Enable and Interrupt Priority registers of 8051. (7)
- 20 a) Design a DAC interfacing circuit with 8051. (8)
- b) Write an 8051 program to transfer letter "A" serially at 4800 baud rate. (6)

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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 μ P	3
2	Write any three addressing modes of 8085 μ P 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 μ C with two examples	3
8	Differentiate between CLR C and CPL C instruction of 8051 μ C	3
9	Explain SCON register in 8051 μ C	3
10	Indicate which mode and which timers are selected for each of the following.	3
	(a) MOV TMOD, #01H	
	(b) MOV TMOD, #20H	

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 8
- (i) Flag flip flops
 - (ii) Instruction decoder and machine cycle encoding
 - (iii) Stack pointer
 - (iv) Program counter
- 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 μ P 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 6th 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 μ C 8

Module -4

- 17 a) Write an 8051 ALP to multiply A1H and B1H and store the LSB and MSB results in R₀ and R₁ registers of bank 2. 8
b) Explain the operation of following instructions of 8051 μ C 6
(a) DA A (b) SUBB A,@R₀ (c) ANL A, #10H
- 18 a) Explain I/O ports and its functions in 8051 μ C 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 μ C 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 μ C 6
b) i). List the interrupts in 8051 8
ii). Write the steps in execution of an interrupt in 8051
