Reg. No.																

Question Paper Code	14063

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Fifth Semester

Electrical and Electronics Engineering

20EEPC503 – MICROPROCESSORS AND MICROCONTROLLERS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	The 8085 microprocessor has how many address and data lines? (a) 8 address lines and 8 data lines (b) 16 address lines and 8 data lines (c) 8 address lines and 16 data lines (d) 16 address lines and 16 data lines	1	K1	CO1
2.	Which signal in 8085 is used to distinguish between memory and I/O operations? (a) R$\overline{D}$ (b) W$\overline{R}$ (c) IO/$\overline{M}$ (d) ALE	1	K1	CO1
3.	In 8085, how many bytes are used in the instruction LXI H, 2050H? (a) 1 byte (b) 2 bytes (c) 3 bytes (d) 4 bytes	1	K1	CO2
4.	Which of the following instructions is used to transfer data from accumulator to memory location 2050H? (a) MOV A, 2050H (b) STA 2050H (c) MVI M, 2050H (d) LDA 2050H	1	K1	CO2
5.	The 8279 keyboard/display controller uses which method for scanning keys? (a) Serial scanning (b) Parallel scanning (c) Multiplexed scanning (d) Interrupt-driven scanning	1	K1	CO3
6.	The 8254 timer/counter operates using: (a) 2 independent 16-bit counters (b) 3 independent 16-bit counters (c) 3 independent 8-bit counters (d) 4 independent 8-bit counters	1	K1	CO3
7.	The 8051 microcontroller has how many I/O ports? (a) 2 ports (b) 3 ports (c) 4 ports (d) 5 ports	1	K1	CO4
8.	Which register in 8051 holds the return address during subroutine calls? (a) Program Counter (b) Stack Pointer (c) Link Register (d) Accumulator	1	K1	CO4
9.	The ARM Cortex-M0 is based on which instruction set architecture? (a) RISC (b) CISC (c) VLIW (d) Microcoded	1	K1	CO5
10.	The vector table in ARM Cortex-M0 is used to: (a) Store ALU results (b) Map exception and interrupt handlers (c) Control GPIO pins (d) Manage timers	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	List any two functions of the accumulator.	2	K1	CO1
12.	Define machine cycle and instruction cycle.	2	K1	CO1
13.	What are the different addressing modes of 8085?	2	K2	CO2
14.	Mention any two data manipulation instructions.	2	K1	CO2
15.	What is the purpose of the 8255 PPI?	2	K1	CO3
16.	What is the need for A/D and D/A interfacing?	2	K1	CO3
17.	What are the types of timers available in 8051?	2	K	CO4
18.	Define serial communication in 8051.	2	K1	CO4
19.	What is the significance of the Cortex-M0 architecture?	2	K1	CO5
20.	List any two features of the ARM programmer's model.	2	K1	CO5
21.	Mention any two modes of 8279 keyboard/display controller.	2	K1	CO3

22.	What is the function of the SFR register in 8051?	2	K1	CO4

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain the architecture of 8085 with a neat block diagram.	11	K2	CO1
		OR			
	b)	Draw timing diagram for the following instructions. (i) STA 6200H (ii) MVI C, 54H.	11	K2	CO1
24.	a)	Discuss with an example for each of the addressing modes in 8085.	11	K2	CO2
		OR			
	b)	Discuss about the concept of subroutines and stack in 8085 with examples.	11	K2	CO2
25.	a)	Build the architecture and discuss in detail the operation of 8259 Programmable Interrupt Controller (PIC).	11	K3	CO3
		OR			
	b)	Construct the functional blocks and working principle of the 8254 Timer/ Counter.	11	K3	CO3
26.	a)	Model the architecture of the 8051 microcontroller and explain how each functional block contributes to overall system operation.	11	K3	CO4
		OR			
	b)	Organize the interrupt structure of the 8051 microcontroller and illustrate how multiple interrupts are prioritized and serviced.	11	K3	CO4
27.	a)	Explain the architecture and main components of the ARM Cortex-M0 core.	11	K2	CO5
		OR			
	b)	Illustrate the microcontroller start-up sequence, including vector table initialization and stack setup.	11	K2	CO5
28.	a)	(i) Explain the following instructions of 8051 micro-controller. 1. DJNZ Ro, Rel.add 2. ADD R1, #45 3. SWAP A	5	K2	CO4
		(ii) Show ARM Development flow with help of a diagram.	6	K2	CO5
		OR			
	b)	(i) Summarize the addressing modes of 8051 microcontroller with suitable examples.	5	K2	CO4
		(ii) Outline the system control block of ARM processor.	6	K2	CO5