Reg. No.																

Question Paper Code	14761

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Fifth Semester

Electronics and Instrumentation Engineering

20EIPC502 - MICROPROCESSOR AND MICROCONTROLLERS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	STA 6009 H is an example of? a) One byte instruction b) Two byte instruction c) Three byte instruction d) Four byte instruction	1	K1	CO1
2.	TRAP is a a) Maskable, highest priority and software interrupt b) Non-maskable, highest priority and hardware interrupt c) Non-Maskable, highest priority and software interrupt d) Maskable, lowest priority and hardware interrupt	1	K2	CO1
3.	The 8085 assembly language instruction that stores the contents of the H and L registers into the memory locations $(2000)_H$ and $(2001)_H$, respectively, is a) SHLD 2000H b) STAX 2000H c) SPHL 2000H d) LXI H, 2000H	1	K3	CO1
4.	Read-only memory holds ____kb of storage in 8051. a) 2 b) 4 c) 6 d) 8	1	K1	CO2
5.	The instruction _____ is used to disable all the interrupts at once in 8051. a) CLR IE.7 b) CLR IE.1 c) CML IE.7 d) CML IE.1	1	K2	CO2
6.	The contents of register A after the execution of the following ALP in 8051? CLR A ORL A,#11H CPL A a) 66H b) EEH c) 11H d) 33H	1	K3	CO2
7.	How many different operating modes are available in the 8254? a) 1 b) 4 c) 5 d) 6	1	K1	CO3
8.	In the 8255 PPI, which operating mode is typically used for interfacing with simple input or output devices, such as keyboards or displays? a) Mode 0 b) Mode 1 c) Mode 2 d) Mode 3	1	K2	CO3
9.	When a key is pressed, a debounce logic comes into operation in a) Scanned keyboard special error mode b) Scanned keyboard with N-Key rollover c) Scanned keyboard mode with 2-key lockout d) Sensor matrix mode	1	K3	CO3

10.	In the keypad programming if no key is pressed then all the keys in keypad shows the value _____ a) 0 b) 1 c) 2 d) 3	*1*	*K1*	*CO4*
11.	Instruction to add the accumulator and register 3 contents. a) ADD @R3, @A b) ADD @A, R3 c) ADD R3, A d) ADD A, R3	*1*	*K2*	*CO4*
12.	In the 4 x 4 keypad interface, which component would one choose for debouncing the key presses to eliminate contact bounce issues? a) Pull-up resistors b) Capacitors c) Schmitt triggers d) Voltage regulators	*1*	*K3*	*CO4*
13.	The embedded system software is developed in _____ language. a) C language b) C++ language c) Java language d) Both C language and C++ language	*1*	*K1*	*CO5*
14.	The processor with a 20-bit address can access maximum memory upto _____ a) 64KB b) 1MB c) 64MB d) 1KB	*1*	*K2*	*CO5*
15.	Evaluate the statement about the CISC processor. 1. It has relatively few instructions. 2. It can have relatively few addressing modes. 3. CISC stands for Complex Instruction Set Computer. a) All statements are true b) Only 1st and 2nd statement are true c) All statement are false d) Only 3rd statement is true	*1*	*K3*	*CO5*
16.	An electronic toy is a typical example of a _____ embedded system. a) Small scale b) Medium scale c) Large scale d) Very large scale	*1*	*K3*	*CO5*

PART – A (ii) (Short Answer Questions)
(8 × 3 = 24 Marks)
Answer ALL Questions

17.	Develop a simple Assembly Language Program (ALP) using 8085 to add two numbers without carry by directly using instructions.	*3*	*K3*	*CO1*
18.	Compare the differences between microprocessors and microcontrollers in terms of architecture and applications.	*3*	*K4*	*CO1*
19.	Apply the concept of register banks in the 8051 microcontroller with an example of register selection.	*3*	*K3*	*CO2*
20.	Classify the addressing modes of the 8051 microcontroller with suitable examples.	*3*	*K4*	*CO2*
21.	Identify the function of the 8254 Programmable Interval Timer and illustrate its use.	*3*	*K3*	*CO3*
22.	Identify some examples of input devices used in microprocessor-based systems and explain their interfacing requirements.	*3*	*K3*	*CO4*
23.	List the interrupts of the 8051 microcontroller and explain their role in real-time applications.	*3*	*K4*	*CO4*
24.	Apply your understanding of CPU architecture to describe the main components of a CPU module and their functions.	*3*	*K3*	*CO5*

PART - B (Descriptive Answer Questions)

(5 × 12 = 60 Marks)

Answer ALL Questions

25.	a)	Examine the functional pin diagram of the 8085 Microprocessor to determine how pin functions change in different modes of operation.	*12*	*K4*	*CO1*
		OR			
	b)	Analyze and Construct the timing diagram for the instruction **MVI A, 32H** and explain each machine cycle involved.	*12*	*K4*	*CO1*
26.	a)	Apply the concept of Addressing in Microcontrollers and explain the five addressing modes of the 8051 microcontroller with examples.	*12*	*K3*	*CO2*
		OR			
	b)	Build the architecture of the 8051 microcontroller and show how different blocks interact during program execution.	*12*	*K3*	*CO2*
27.	a)	Examine the architecture of the 8255 Programmable Peripheral Interface (PPI) with a neat block diagram. Analyze how it can be configured for interfacing with an 8085 microprocessor such that Port A as input and Port B and Port C as output.	*12*	*K4*	*CO3*
		OR			
	b)	Analyze the steps involved in interfacing the 8254 Programmable Interval Timer with the 8085 microprocessor.	*12*	*K4*	*CO3*
28.	a)	Model the block diagram for interfacing a stepper motor with an 8051 microcontroller.	*12*	*K3*	*CO4*
		OR			
	b)	Build the circuit diagram for interfacing a matrix keypad with an 8051 microcontroller.	*12*	*K3*	*CO4*
29.	a)	Apply the principles of RISC architecture to a practical computing scenario and explain with an example.	*12*	*K3*	*CO5*
		OR			
	b)	Construct RISC and CISC architectures, discussing their advantages and disadvantages in modern computing systems.	*12*	*K3*	*CO5*