Reg. No.															

Question Paper Code	13480

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fifth Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

20EIPC502 - MICROPROCESSOR 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.	Which of the following is not a 16-bit register in the 8085 microprocessor? (a) SP (b) PC (c) HL (d) B	1	K1	CO1
2.	In 8085, the stack works on which principle? (a) FIFO (b) LIFO (c) FILO (d) LILO	1	K1	CO1
3.	The ports used for external memory interfacing in the 8051 is_____ (a) Port 0 and Port 2 (b) Port 1 and Port 2 (c) Port 3 and Port 1 (d) Port 0 and Port 1	1	K1	CO2
4.	_____ Interrupts has the highest priority. (a) Serial Communication (b) Timer 0 (c) External 0 (d) Timer 1	1	K1	CO2
5.	Which IC is known as the programmable peripheral interface? (a) 8259 (b) 8255 (c) 8279 (d) 8254	1	K1	CO3
6.	_____ IC is used for keyboard and display interfacing? (a) 8279 (b) 8255 (c) 8254 (d) 8251	1	K1	CO3
7.	The motor that requires digital pulses for operation is (a) Servo motor (b) Induction motor (c) Stepper motor (d) DC motor	1	K1	CO4
8.	The instruction used to rotate accumulator contents left in 8051 is (a) RL A (b) RRC A (c) SWAP A (d) CPL A	1	K1	CO4
9.	_____ is responsible for transferring data between CPU and memory? (a) Address bus (b) Data bus (c) Control bus (d) PCI bus	1	K1	CO5
10.	The feature which is common in embedded systems is (a) General-purpose computing (b) Real-time processing (c) User reprogramming (d) Multi-user OS	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Define stack in the context of the 8085 microprocessor.	2	K1	CO1
12.	Differentiate between RST 7.5 and INTR interrupts.	2	K2	CO1
13.	State the function of ALE signal in 8085.	2	K1	CO1
14.	List any two features of the 8051 microcontroller.	2	K1	CO2
15.	Name the SFRs used for interrupt control in 8051.	2	K1	CO2
16.	Recall the purpose of the EA pin in 8051.	2	K1	CO2
17.	Narrate the function of the 8259 interrupt controller.	2	K1	CO3
18.	Write any two applications of 8254 timer.	2	K1	CO3
19.	Define PWM and its role in servo motor control.	2	K1	CO4
20.	Mention any two advantages of using microcontrollers in control applications.	2	K1	CO4
21.	Mention any two features of 32-bit microprocessors.	2	K1	CO5
22.	Recite the role of the control unit in a CPU module.	2	K2	CO5

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Draw the architecture of 8085 microprocessor and explain the function of each block.	*11*	*K2*	*CO1*
		OR			
	b)	Classify the 8085 instruction set and explain any four types with suitable examples.	*11*	*K2*	*CO1*
24.	a)	Draw and explain the architecture of the 8051 microcontroller in detail.	*11*	*K2*	*CO2*
		OR			
	b)	Write an 8051 program to transfer data from one memory location to another. Explain each instruction used.	*11*	*K2*	*CO2*
25.	a)	With neat block diagram explain the operating modes of the 8255 Programmable Peripheral Interface.	*11*	*K2*	*CO3*
		OR			
	b)	Explain how the interfacing of A/D and D/A converters with 8051 microcontroller is attained.	*11*	*K2*	*CO3*
26.	a)	Describe the interfacing of a 4x4 matrix keyboard with 8051 and write a simple program to detect key press.	*11*	*K2*	*CO4*
		OR			
	b)	Explain how to control the direction and speed of a DC motor and also write an Assembly language program using 8051.	*11*	*K2*	*CO4*
27.	a)	Explain the architecture and features of a 16-bit microprocessor with a neat block diagram.	*11*	*K2*	*CO5*
		OR			
	b)	Describe the types of bus configurations used in microprocessor-based systems.	*11*	*K2*	*CO5*
28.	a) (i)	Discuss about the role of microcontroller programming in the implementation of automation and control systems.	*6*	*K2*	*CO4*
	(ii)	Compare 32-bit, and 64-bit microprocessor architectures with respect to data width and performance.	*5*	*K2*	*CO5*
		OR			
	b) (i)	With a neat diagram, explain how to interface a 7-segment display to 8051.	*6*	*K2*	*CO4*
	(ii)	Highlight key differences between RISC and CISC processors.	*5*	*K2*	*CO5*