Reg. No. | | | | | | | | | | | | | | |

Question Paper Code | **13352**

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024 (JAN - 2025)
First Semester
M.E. - Embedded Systems Technologies
24PESPC102 - MICROCONTROLLER BASED SYSTEM DESIGN
Regulations - 2024

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	State the alternate functions of Port 3 in 8051 microcontroller.	2	K1	CO1
2.	If a 12 MHz crystal is connected with 8051, how much is the time taken for the count in timer 0 to get incremented by one?	2	K2	CO1
3.	Write a program to find the 2's complement using 8051.	2	K2	CO2
4.	Mention the addressing mode used in the instruction MOV A, @DPTR supported by 8051.	2	K1	CO2
5.	Signify the job of the TMOD register.	2	K2	CO3
6.	Mention the features of serial port in mode 0.	2	K1	CO3
7.	What is RISC Processor?	2	K2	CO4
8.	Explain about watchdog timer.	2	K2	CO4
9.	What is state machine model?	2	K2	CO5
10.	Define the term glitch in ADC.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

		Marks	K–Level	CO
11. a)	Discuss about the organization of Internal RAM and Special function registers of 8051 Microcontroller in detail.	13	K2	CO1
	OR			
b)	Describe the functions of the following signals in 8051. RST, EA, PSEN and ALE.	13	K2	CO1
12. a) i)	Explain the different types of addressing modes in 8051.	7	K2	CO2
ii)	Explain the arithmetic instructions of 8051.	6	K2	CO2
	OR			
b) i)	Write an ALP to sort the given numbers in descending order using 8051.	7	K2	CO2
ii)	Explain the branch instructions of 8051.	6	K2	CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   ***13352***

13. a) i) In 8051 what memory area is assigned for Interrupt vector table? Explain. — 7 K2 CO3

ii) Identify if a programmer can change the assigned memory space for the table? Justify. — 6 K3 CO3

OR

b) i) Explain the working of 8051 timers as Counters. — 7 K2 CO3

ii) Develop a program for counter 1 in mode 2 to count the pulses and display the state of TL1. — 6 K3 CO3

14. a) Identify and explain the important features of PIC18 with necessary architectural sketch. — 13 K3 CO4

OR

b) A switch is connected to pin RC6. Apply the appropriate addressing mode and frame a program to check the status of SW and do the following.
If SW = 0, send letter 'N' to PORTA.
If SW =1, send letter 'Y' to PORTA. — 13 K3 CO4

15. a) i) Explain the UART in PIC micro controller. — 7 K2 CO5

ii) Write short notes on CCP modules. — 6 K2 CO5

OR

b) i) Write a detailed note on the software interrupts. — 7 K2 CO5

ii) Explain the interfacing of temperature sensor with PIC18 series. — 6 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Model a scheme for micro controller based multi channel data acquisition system. — 15 K3 Co6

OR

b) Calculate the value to be loaded into timer register so as to have a time delay of 5 ms. Write a program to create a pulse width of 5 ms on pin P2.3.Assume crystal frequency to be 11.0592MHz? — 15 K3 CO6

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13352**