

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

| | |
|----------------------------|--------------|
| Question Paper Code | 12735 |
|----------------------------|--------------|

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

First Semester

M.E. - Embedded Systems Technologies

20PESPC102 - MICROCONTROLLER BASED SYSTEM DESIGN

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | |
|--|----------------|
| 1. State the importance of special function registers in 8051. | 2 K1 CO1 |
| 2. Give the significance of the EA line of 8051 microcontroller. | 2 K1 CO1 |
| 3. Illustrate bit manipulation instruction with an example. | 2 K2 CO2 |
| 4. Illustrate the DJNZ instruction. | 2 K2 CO2 |
| 5. Which register is used for serial programming in 8051? | 2 K1 CO3 |
| 6. Show the bits available in TMOD register. | 2 K1 CO3 |
| 7. Define WREG register in PIC. | 2 K1 CO4 |
| 8. Using the instruction of PIC microcontroller, convert BCD to Hex. | 2 K1 CO4 |
| 9. What are the interrupts available in PIC? | 2 K1 CO5 |
| 10. List the three data transfer speed levels in I2C. | 2 K1 CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

- | | |
|---|-----------------|
| 11. a) Explain the memory organization of 8051 microcontroller. | 13 K2 CO1 |
|---|-----------------|

OR

- | | |
|--|-----------------|
| b) Explain the architecture of 8051 microcontroller, with neat sketch. | 13 K2 CO1 |
|--|-----------------|

- | | |
|---|-----------------|
| 12. a) Write an ALP to find smallest of the given numbers using 8051. | 13 K3 CO2 |
|---|-----------------|

OR

- | | |
|---|-----------------|
| b) Write an ALP to sort the given numbers in descending order using 8051. | 13 K3 CO2 |
|---|-----------------|

- | | |
|---|-----------------|
| 13. a) Describe all I/O port structure of 8051 with neat diagram. | 13 K2 CO3 |
|---|-----------------|

OR

- | | |
|--|-----------------|
| b) Explain how an LCD is interfaced with 8051. | 13 K2 CO3 |
|--|-----------------|

14. a) Describe in detail about memory organization of a PIC 13 K2 CO4 microcontroller.

OR

- b) Explain the architecture of PIC18 with necessary diagrams. 13 K2 CO4

15. a) Explain the mechanism in PIC for interfacing DAC. 13 K2 CO5

OR

- b) Explain how temperature sensor is interfaced with PIC18 series 13 K2 CO5 microcontroller.

PART - C (1 × 15 = 15 Marks)

16. a) Explain the speed control of DC motor using PIC micro controller 15 K2 CO6 with suitable diagram.

OR

- b) Draw and discuss a scheme for micro controller based data acquisition 15 K2 CO6 system.