

Reg. No.

Question Paper Code

21331

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

First Semester

M.E. - Embedded System Technologies

20PESPC102 - MICROCONTROLLER BASED SYSTEM DESIGN

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. List the addressing modes supported by 8051. | 2,K1,CO1 |
| 2. Illustrate bit manipulation instructions with two examples. | 2,K1,CO1 |
| 3. State the function of DPTR register. | 2,K1,CO2 |
| 4. Signify the job of the TMOD register. | 2,K1,CO2 |
| 5. What is meant by PCLATH? Give its use. | 2,K2,CO3 |
| 6. How to select the memory bank in the PIC microcontroller? | 2,K2,CO4 |
| 7. Give the purpose of busy flag in LCD. | 2,K2,CO5 |
| 8. Brief about the I2C bus. | 2,K2,CO5 |
| 9. Mention the importance of RTOs for real time applications? | 2,K1,CO6 |
| 10. Write a C18 program to toggle all the bits of Port A continuously. | 2,K2,CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain the Interrupt structure with the associated registers in 8051 microcontroller. 13, K2, CO1
- OR**
- b) With neat sketch explain the architecture/ functional block diagram of 8051 microcontroller. 13, K1, CO1
12. a) Explain 8051 serial port programming with examples. 13, K2, CO2
- OR**
- b) Explain the interfacing of thermometer with 8051 microcontroller. 13, K2, CO2
13. a) Explain how to set Timer1 and Timer 2 in PIC. 13, K2, CO4
- OR**
- b) Briefly explain about flash memory in PIC with necessary diagram. 13, K2, CO4

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

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14. a) Draw and explain the architecture of on chip ADC of PIC micro controller in detail and write suitable assembly language program for configuring the ADC. *13,K3,CO5*

OR

- b) (i) Explain the UART in PIC micro controller. *7,K2,CO5*
(ii) Write short notes on CCP modules. *6,K2,CO5*

15. a) Draw and discuss a scheme for micro controller based multi channel data acquisition system. *13,K2,CO6*

OR

- b) Explain the PWM pulse generation using micro controller. *13,K3,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Write an assembly language program to add two numbers stored in location 07H & 08H. *7,K3,CO3*

(ii) Write a program in PIC micro controller to multiply 'N' byte numbers. *8,K3,CO3*

OR

- b) Justify the statement — Once the watchdog timer is enabled (disable), it is not possible to make it off(on). *15,K3,CO3*