G 1137 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2016

Seventh Semester

Branch : Electrical and Electronics Engineering

SYSTEM DESIGN WITH MICROCONTROLLERS (E)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 4 *marks.*

1. Mention the difference between microcontrollers and microprocessors.
2. Explain the PSW Register.
3. Work down the difference between the following instructions :—
   (a) RET and RETI.
   (b) JB b radd and JBC b, radd.
4. Define the interrupt structure of 8051.
5. Write down the sequence of events in CALL execution.
6. Explain the SFR's used in serial communication.
7. What are the different modes in Timer operation of 8051 ?
8. Explain the ADC Interfacing with 8051.
9. Write a brief note on PLCs.
10. Draw the basic block diagram of a Data Acquisition System.

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 12 *marks.*

11. Explain the Internal Architecture of 8051 with block diagram.

Or

12. (a) Draw the pin out diagram of 8051 and explain its functions. (8 marks)
    (b) Describe the internal memory organisation of 8051. (4 marks)

Turn over

13. (a) Write a program to add the contents of RAM location 60H, 61H and 62H and store the results in RAM location 41H (MSB) and 40H (LSB).

(7 marks)

(b) Explain the stack operation in 8051. Mention the instructions used for it. What is the default value of stack pointer after reset ?

(5 marks)

Or

14. (a) What are the different Arithmetic and logic instructions used in 8051 programming ?

(6 marks)

(b) Write a program to count the number of odd numbers and even numbers in an array on '*n*' elements (numbers) stored from 4200 h onwards.

(6 marks)

15. Write a program to generate a square wave with an one time of 3ms and an OFF time of 10ms on all pins of port 0. Assume the crystal frequency of 8051 is $22mH_2$.

Or

16. Briefly explain the procedure for the execution of an interrupt in 8051 on the receipt of an interrupt request with an example.

17. Interface a 4k RAM and a 2k EPROM with 8051, The starting address of RAM is 4000H and the starting address of EPROM is 8000H.

Or

18. Describe the LCD display and keyboard Interfacing with 8051.

19. With neat block diagrams and Algorithm, explain the application of 8051 as a frequency counter.

Or

20. Explain now a temperature control system can be implemented using 8051 microcontroller.

[5 × 12 = 60 marks]