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BIEE-010

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

00218

December, 2015

BIEE-010 : MICRO-CONTROLLERS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any* ***seven*** *questions. Assume missing data, if any, suitably. Use of scientific calculator is permitted.*

1. (a) What are the purposes of $\overline{EA}$, $\overline{PSEN}$, ALE, XTAL1 and XTAL2 ? 5

(b) Compare the Data memory and Program memory of 8051 micro-controller. 5

2. (a) Identify the Addressing mode in the following instructions : 5

(i) ADD A, # 80 H

(ii) ADD A, 74 H

(iii) ADD A, @ RO

(iv) MOV A, @A + DPTR

(v) RL A

(b) Write a program to fill a block of memory in the internal RAM with "AA". 5

3. (a) Write a program to ADD two 16-bit Data stored in external memory locations. The first Data is stored in locations 4000H and 4001H, while the second is stored in locations 4002H and 4003H. 5

(b) What are the different interrupt sources that 8051 has and how are they handled ? 5

4. (a) Mention and explain any five bit manipulating instructions. 5

(b) How are the 8051 instructions classified based on

(i) length of the instruction,

(ii) addressing mode, and

(iii) functions performed ?

Give one example for each. 5

5. (a) Write a program to transmit the ASCII character 'A' continuously using the 8051 serial port. Use 9 bit data at 9600 baud. Use polled operation. 5

(b) Explain the different operating modes of serial ports of 8051. 5

6. (a) Write a program to copy a block of 20 bytes of data available from Address 60H to 73H to the location starting from 40H. 5

(b) What are the roles of interrupt and hardware reset in power management ? 5

7. (a) Explain the operational modes of Timer 0 and Timer 1 of 8051 micro-controller. *5*

(b) Assuming that 8051 micro-controller is interfaced with a 12 MHz crystal, develop a program to generate Timer 0 interrupts at every 50 milliseconds continuously. *5*

8. (a) Explain the Architecture of 8051 micro-controller with suitable diagrams. *6*

(b) Discuss the SFR associated with external interrupts. *4*

9. (a) An array of random integers is placed from internal data memory location 31H onwards. The number of terms (N) of the array is available in the location 30H. Develop a program to place the entire array in reverse order in the same memory area. *6*

(b) Explain the interfacing of DAC (0808) with 8051. *4*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Microcontrollers and Microprocessors

(b) Addressing modes of 8051

(c) SFR processor status word

(d) Memory organization of 8051