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BIEE-010

B.Tech. IN ELECTRICAL ENGINEERING (BTELVI)

00415

Term-End Examination

June, 2012

BIEE-010 : MICROCONTROLLERS

Time : 3 hours *Maximum Marks : 70*

Note : *(i)* *Attempt any seven questions.*

(ii) *Assume missing data if any suitably.*

(iii) *Use of scientific calculator is permitted.*

1. (a) What are the major differences between a microprocessor and a microcontroller and list 2 applications of microcontroller ? 5

   (b) Explain basic features of RISC and CISC processors. 5

2. (a) Explain features of 8051 microcontroller using functional block diagram. 5

   (b) Describe Interrupts in 8051 microcontroller. 5

3. (a) Explain the addressing modes of 8051 with example. 5

   (b) Mention any five instructions for adding one to the register 'A'. 5

4. (a) Explain any two conditional jump instruction with suitable examples. 5

(b) (i) Discuss why the total size of 8051 C variables should not exceed 100 bytes. 2.5

(ii) What is the drawback of using ROM code space for 8051 C data ? 2.5

5. (a) Show the connections of TxD and RxD pins of 8051 to a DB-9 RS 232 Connector Via MAX 232. 5

(b) What is interrupt service routine ? Discuss interrupt vector table for the 8051. 5

6. (a) To which register do RI and TI belongs ? When there flags are raised ? Is that register bit addressable ? 5

(b) Draw internal RAM structure of 8051. 5

7. (a) Write a program to rotate a motor 64° in the clockwise direction. The motor has a step angle of 2°. Use the 4 step sequence. 6

(b) What is the band rate ? How can you double the band rate in the 8051. If the crystal frequency is 22 MHz, what will be the band rate if TH1 = −3 with SMOD = 0 ? 4

8. (a) The no. A6H is placed somewhere in external RAM between location 0100H and 0200H. Find the address of that location and put in R6 (LSB) and R7 (MSB). 6

(b) Explain the function of following instructions. 4

(i) SUB B

(ii) INC DPTR

9. (a) Write an 8051 C program to toggle all bits of P2 continuously every 500 MS. Use timer L, mode 1 to create the delay. 6

(b) How do you distinguish between 8 bit and 16 bit microcontroller ? Give example of 8, 16 bit microcontroller. 4

10. Write short notes on ***any two*** of the following : **2x5=10**

(a) Harvard and Von - neumann CPU structure

(b) Interfacing 8051 to ADC

(c) Interfacing 8051 to DC Motor