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Fourth Semester B.E. Degree Examination, June-July 2009
Microcontrollers

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

Note: *Answer any FIVE full questions choosing at least two questions from each unit.*

PART – A

1　a.　Define microcontroller and differentiate the RISC and CISC processors.　**(05 Marks)**
　　b.　With the neat block diagram, explain the architecture of 8051.　**(10 Marks)**
　　c.　Show the neat schematic interface 8K External Data RAM to 8051.　**(05 Marks)**

2　a.　What is addressing mode? Explain different addressing modes with examples.　**(09 Marks)**
　　b.　Specify the memory area for bit level logical instructions used in 8051 and list bit level logical instructions.　**(05 Marks)**
　　c.　Write an Assembly language program to add two input data's of 16-bit result in three different addressing modes.　**(06 Marks)**

3　a.　Explain the following instructions with their function byte and cycle used :
　　　　i) CJNE dest, source target ;　　ii) A call target
　　　　iii) DJNZ R_1,rel ;　　　　　　iv) SWAP A ;　　　　v) DA A　**(10 Marks)**
　　b.　Explain the different types of Jump instructions in 8051.　**(06 Marks)**
　　c.　What is interrupt? List different interrupts using 8051 with their ISR address.　**(04 Marks)**

4　a.　Write a C-program to toggle all bits of P_0 and P_2 continuously with 250m sec delay. Use inverting operator.　**(08 Marks)**
　　b.　What is data serialization? Explain different types with examples.　**(06 Marks)**
　　c.　Write a 8051 C-program to convert a given hex-data OFFls in to its equivalent decimal data and display the result digits on P_0, P_1 and P_2　**(06 Marks)**

PART – B

5　a.　Explain T mod and T con registers with its bit pattern.　**(08 Marks)**
　　b.　Explain mode-2 programming with neat sketch and specify the program steps.　**(06 Marks)**
　　c.　Assuming that clock pulses are Fed in to Pty T_1, write a program for counter-1 in mode-2 to count pulses and display the state of TL_1 count on P_2　**(06 Marks)**

6　a.　Explain RS-323 hand shaking signals and specify the purpose of max-232 while interfacing.　**(07 Marks)**
　　b.　Write 8051 program to transfer serially the message "VTU BELGAUM" continuously at a band rate of 9600.　**(07 Marks)**
　　c.　Explain the importance of TI and RI Flags.　**(06 Marks)**

7　a.　Explain IE and IP registers with their bit pattern and show how priorities change with example.　**(10 Marks)**
　　b.　Write 8051 interrupt program to do the following :
　　　　i) Receive data serially P_2 and sent it to P_1 continuously.
　　　　ii) Make timer-0 to generate a square wave of 5KHz frequency at port Po.1.
　　　　Assume XTAL – 11.059MHz at a band of 9600.　**(10 Marks)**

8　a.　Explain the registers and pins of LCD and write an ALP to display message "HELLO" as LCD displays.　**(10 Marks)**
　　b.　Describe the 8051 connection to stepper motor and write an Assembly language program to rotate the motor clockwise for 180^0. Assuming motor specification 1.8^0/step　**(10 Marks)**

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