USN ☐☐☐☐☐☐☐☐☐☐   **10MT54**

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Microcontroller

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain the difference between the following:
      (i)   RISC and CISC processor.
      (ii) Hardvard and Von-neumann architecture.   **(08 Marks)**
   b. Explain TCON and TMOD registers of 8051.   **(06 Marks)**
   c. Discuss briefly the features of 8051 microcontroller.   **(06 Marks)**

2 a. What is addressing mode? Explain different addressing modes with an example. **(10 Marks)**
   b. What is stack? Explain with examples the PUSH and POP instructions. **(06 Marks)**
   c. Explain (i) SWAP A   (ii) MOV c, b instruction   **(04 Marks)**

3 a. Explain different ranges for jump instruction available in 8051 microcontroller. **(10 Marks)**
   b. Classify the CALL instruction in 8051. Explain each one.   **(06 Marks)**
   c. What is interrupt? List different interrupts using 8051.   **(04 Marks)**

4 a. Explain C data types for 8051 with their data size in bits and data ranges. **(10 Marks)**
   b. Write a 8051 C program to toggle the bits of P_1 ports continuously with 250 ms delay. **(10 Marks)**

PART – B

5 a. Generate a square wave with a ON time of 3 msec and an OFF time of 10 msec in all pins of port 0. Assume an XTAL of 22 MHz. **(10 Marks)**
   b. Explain mode 2 programming with a neat sketch and specify the program steps. **(10 Marks)**

6 a. Explain RS232 hand shaking signals and specify the purpose of max 232 while interfacing. **(10 Marks)**
   b. Write 8051 program to transfer serially the message "VTU BELGAUM" continuously at a baud rate of 9600. **(10 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 C program to do the following :
      (i)   Receive data serially P2 and sent it to P0 continuously.
      (ii) Read port P1 transmitt data serially and give a copy to P2.
      (iii) Make timer 0 to generate a square wave of 5 kHz frequency at port P0.1.
      XTAL frequency = 11.0592 MHz at a baud rate of 9600.   **(10 Marks)**

8 a. Explain with a block diagram step by step procedure involved to interface 4×4 matrix keyboard with 8051. **(10 Marks)**
   b. Discuss interfacing of ADC 0804 with 8051 using timing diagram for ADC. **(10 Marks)**

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