Duration: 03 Hours.   Total marks: 80

N. B. (1) Question No. 1 is **compulsory**.

      (2) Answer any **Three** out of remaining questions.

      (3) Assumptions made should be **clearly** stated.

Q.1 Solve any four   20

   a. Draw and explain block diagram of Microprocessor.

   b. Compare characteristics of RISC & CISC architecture

   c. Give comparison between 8051 µc families

   d. Describe the function of following instruction of 8051 µc.

       i.   ADD A,60H

       ii.   MOV A,@Rp

       iii. CPL A

       iv. SWAP A

   e. Write steps for programming the 8051 microcontroller to transfer data serially.

Q.2 a. Draw complete architecture of 8051 microcontroller & explain the use of all ports.   10

     b. Write an assembly program to convert packed BCD 29H to two ASCII numbers and
        place them in R2 & R6.   10

Q.3 a. Explain addressing modes of 8051 microcontroller with instruction examples.   10

     b. Explain TMOD & TCON timer registers of 8051 microcontroller   10

Q.4 a. The word "RAJIV" is to be burned in flash ROM location starting from 0500H of
       microcontroller. Write a program to do this & to read this data into internal RAM locations
       starting from 80H.   10

     b. Interface a dc motor with 8051 microcontroller & also write an 8051 program to run the dc motor
       in both forward & reverse direction with delay?   10

Q.5 a. Write assembly language program to generate a wave with an ON time of 3ms & an OFF time
       of 10ms on all pins of port0.Assume XTAL of 22 MHz.   10

     b. Draw the diagram to interface external RAM & ROM with 8051 µc. Mention the pins during
       interfacing & describe in brief.   10

Q.6 a. Draw complete circuit diagram for interfacing the LCD module to 8051 microcontroller. State
       steps for sending data to LCD module.   10

     b. Draw interfacing of DAC with 8051 and write an assembly language program to produce sine
       wave.   10

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