(03 Hours)

Total Marks-80

N.B. : 1) Question No. **1** is **compulsory**.
    2) Attempt any **three** questions from **remaining five** questions.
    3) Assume suitable **data** wherever necessary.
    4) Figure to right indicate **full** marks.

1.   Attempt **any Five** questions-   20
   a) Explain RISC architecture.
   b) Write a program to convert FFH hexadecimal number to decimal.
   c) Explain bit addressable memory of 8051.
   d) Give comparisons between 8051µc and 8085µp.
   e) Explain in short I^2C.
   f) Write a program to initialize the serial port to operate as an 8-bit UART at 2400 baud.

2. a) Draw and explain the Port1 and Port2 internal structures of 8051µc.   10
   b) A switch is connected to pin P1.7. Write a program to check the   10
   status of SW and perform the following:
       i) If SW = 0, send letter N to P2 and
       ii) If SW = 1, send letter Y to P2.

3. a) Explain addressing modes of 8051 with instruction example.   10
   b) Draw and explain the interfacing of ADC with 8051 and write a   10
   program to select channel 2, read the data and calls conversion and
   display subroutines.

4. a) Explain with neat diagram the power saving and power down mode   10
   of 8051 in details with PCON register.
   b) Explain Timer2 in Capture mode and Auto reload mode with neat   10
   diagram.

5. a) How do you explain with diagram to interface a dc motor with 8051   10
   microcontroller and also write an 8051 program to run the dc motor
   in both forward and reverse direction with delay?
   b) The word "RAJ" is to be burned in the flash ROM location starting   10
   from 0400H of microcontroller. Write a program to do this and to
   read this data into internal RAM locations starting from 60H.

[TURN OVER]

6. Attempt **any two-** 20

a) Draw complete circuit diagram for interfacing the LCD module to 8051 µc. State steps for sending data to the LCD module.

b) Write an 8051C program to send the two messages "Normal Speed" and 'High Speed' to the serial port. Assuming that SW is connected to pin P2.0, monitor its status and set the baud rate as follows:
    SW = 0, 28,800 baud rate
    SW = 1, 56K baud rate.
    Assume that XTAL = 11.0592 MHz for both cases.

c) Write a program and draw flow chart to add the first ten natural numbers using 8051 microcontroller.

———————————