Assignment - 3

Short Answer Questions (write any five questions)

1. What is microcontroller? How does it differ from microprocessor?

2. Write the following pin functions of 8051.

    i) PSEN   ii) XTAL   iii) EA   iv) RST

3. a) Explain about PSW of 8051.

    b) Explain the special function of port-3 of 8051

4. a) Write about memory banks in 8051.

    b) Discuss the format of PCON register.

5. a) List various interrupts of 8051 and Write the priority of interrupt in 8051.

    b) Discuss the format of IE and IP registers.

6. What is stack and stack pointer? Write its role in CALL instruction.

7. a) List the special functions registers responsible for serial I/O in 8051.

    b) Give the functions of each bit in TMOD register.

8. a) What are the vector addresses of all the interrupts in 8051?

    b) Write an ALP for 8051 to complement the upper nibbles of given byte 57H.

9. Explain the following instructions.

    I) DJNZ   ii) SWAP A   iii) CJNE

10. Describe the following 8051 instructions with an example.

    a) XCHD   b) MOVX   c) JNB   d) MOVC

Long Answer Questions (write any six Questions)

1. Draw and explain the architecture of 8051 Microcontroller.

2. a) Describe the internal and external memory organization of 8051.

   b) With examples explain exchange PUSH and POP instructions of 8051.

3. Discuss addressing modes of 8051 with examples.

4. Explain the 8051 instruction set with examples.

5. a) Draw the port-0 structure of 8051 and explain.

   b) Write an ALP for 8051 to read bytes of data from external RAM starting at 8400H and save the data in internal RAM starting at 70H.

6. Explain the following 8051 instructions with examples.

   i) Rotate   ii) Data Movement   iii) Control Transfer

7. a) Explain the timer operation of 8051 and draw the format of TCON registers.

   b) How do you program 8051 Timer in mode 1 to generate a delay of 5msec?

8. a) Explain the serial communication operation of 8051 and draw the format of SCON register.

   b) Write a program to transfer 'A' serially at 4800 baud rate continuously. Show configurations of all systems required.

9. Draw the interface diagram of stepper motor with 8051 and write program to rotate it in clock wise direction continuously.

10. Draw the structure of port-0 (P0), P1, P2 and P3 in 8051 and explain.

11. a) Write an ALP for the 8051 to transfer letter 'M' serially at 9600 baud rate, continuously.

    b) Draw the interface of DAC to 8051 and write a program to generate triangular wave.