1. Discuss the bit format of T_{MOD} and T_{CON} registers in MCS-51.

2. Explore bit pattern of T_{MOD} register in 8051 microcontroller. Write an ALP to generate a pulse train of 2 sec period on pin $P_{2.4}$. Use timer1 in mode1. $X_{TAL} = 22$ MHz.

3. Explain in detail bit pattern of SCON register in 8051. Write a program to transfer a letter 'Y' serially at 9600 baud continuously, also send a letter 'N' through port0 which is connected to a display device.

4. Write a program to transfer letter 'z' serially at 9600 baud continuously and also send letter 'm' through port1, which is connected to display device.

5. Explain the various SFRs you need, while programming a serial port.

6. Write a note on serial communication using 8051 microcontroller.

7. Explain Interrupts in 8051 microcontroller.

8. Explain the structure of interrupt prioprity register (IPR) of 8051.

9. Write a program to generate two square waves one of 10KHz frequency at pin $P_{2.1}$ and other of frequency 25 KHz at pin $P_{3.3}$. Assume $X_{TAL} = 22$ MHz.

10. What do you mean by interrupt priority? Explain, how to change priority using I_P register. Two switches are connected to pin $P_{3.2}$ and $P_{3.3,}$ when a switch is pressed the corresponding line goes low. Write an ALP to:
    i) Light all LED's connected to port 0 if first switch is pressed.
    ii) Light all LED's connected to port 2 if second switch is pressed.

11. Explain the importance of I_E register in 8051 microcontroller. Write a ALP to generate a square wave that has a high period of 1085 µs and low portion of 15 µs, using interrupts. Assume $X_{TAL} = 22$ MHz.

12. Write a note on interrupt priority in the 8051 microcontroller.

13. Draw the interfacing of ADC0804 with microcontroller 8051. Analogue signal is applied at the input of ADC. Write an ALP to read data from ADC and store it at a memory location.

14. Draw and explain the interface of LCD with 8051 microcontroller.

15. How can external frequency be counted using the 8051 microcontroller. Write steps to program timer block in 8051 in mode 2 operation. Using timer1 in mode1, write an 8051 based ALP to generate a frequency of 100 KHz on Pin $P_{2.3.}$ Assume $X_{TAL} = 22$ MHz.

16. Write a program to generate a pulse train of 2 seconds period on pin $P_{3.4}$. Use timer1 in mode1. Assume $X_{TAL} = 22$ MHz.

Q. Write a program to generate a pulse train of 2 seconds period on pin P3.4. Use timer1 in mode1. Assume XTAL = 22 MHz.