1. Two switches are connected to P2.3 and P2.4 and one LED is connected to P0.0. Write a program that continuously monitors the status on P2.3 pin. When status is high, LED will be turned ON and when status is low, LED will be turned OFF. When switch on P2.4 is pressed LED will toggle with delay of 500ms. (Standard delay) .

2. Using External interrupt concept, control LED connected on P0.0. Apply pulse on INT0 to turn on LED and simultaneously send number of arrival of pulses (count of key pressed) to P2.

3. Write a program to get a byte of data from P1 (8 switches are connected). If it is less than (100)$_D$, send it to P2 else P0.

4. Three LED are connected to P0.0, P0.1 and P0.2 respectively. A switch is connected to P2.6. Write a program to blink LEDs with a delay of 1 sec one after another when switch is pressed.

5. Write a program to take input from P1 and send it serially. On P1, 8 switches are connected. When switch on P2.0 is pressed data will be read and send serially.

6. Write a program to read the from P1 and P2 port on switch press connected on P3.0 and perform following operations. Display result on P0.
   AND operation – on pressing P3.1
   OR operation – on pressing P3.2
   XOR operation – on pressing P3.3
   NOT operation – on pressing P3.4
   SHIFT RIGHT – on pressing P3.5
   SHIFT LEFT – on pressing P3.6

7. Write a program to toggle bits of P2 with a delay of 150ms. Show calculations. Assume XTAL = 11.0592MHz.

8. Assume that XTAL = 11.0592MHz, write a program to generate a square wave of 2KHz frequency on pin P1.5. Show calculation. Use timer mode 1.

9. Write an 8051 C program to toggle only P1.6 continuously every 250 ms. Use Timer 0, mode 2 (8 bit auto reload) to create a delay.

10. Write an 8051 C program to create a frequency of 2500 Hz on pin P2.7. Use suitable mode of Timer 1. Give reasons of using such mode.

11. Write an 8051 C program to transfer the alphabets from A to Z serially at 4800 baud rate and toggle P1.0 with delay of 50 ms using interrupts.

12. A switch is connected to pin P1.2. Write an 8051 C program to monitor SW and create the following frequencies on pin P1.7: SW=0: 500Hz, SW=1: 750Hz, use Timer 0, mode 1 for both of them.

13. Assume that a 1-Hz external clock is being fed into pin T1 (P3.5). Write a C program for counter 1 in mode 2 (8-bit auto reload) to count up and display the state of the TL1 count on P1. Start the count at 0H.

14. Assume that a 1-Hz external clock is being fed into pin T0 (P3.4). Write a C program for counter 0 in mode 1 (16-bit) to count the pulses and display the state of the TH0 and TL0 registers on P2 and P1, respectively.

15. Write an 8051 C program to transfer the message "YES" serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously. Write a C program that continuously gets a single bit of data from P1.7 and sends it to P1.0, while simultaneously creating a square wave of 200 µs period on pin P2.5. Use Timer 0 to create the square wave. Assume that XTAL = 11.0592 MHz.

16. Write a C program using interrupts to do the following:
    (a) Receive data serially and send it to P0
    (b) Read port P1, transmit data serially, and give a copy to P2
    (c) Make timer 0 generate a square wave of 5 kHz frequency on P0.1
    Assume that XTAL = 11.0592 MHz. Set the baud rate at 4800

17. Write a C program using interrupts to do the following:
    (a) Generate a 10 KHz frequency on P2.1 using T0 8-bit auto-reload.
    (b) Use timer 1 as an event counter to count up a 1-Hz pulse and display it on P0. The pulse is connected to EX1.
    Assume that XTAL = 11.0592 MHz. Set the baud rate at 9600.

18. Write an 8051 C program to transfer the message numbers from 25 to 45 serially at 9600 baud, 8-bit data, 1 stop bit. Do this continuously.