Unit -II
The 8051 Microcontrollers, 8051 Programming in 'C'
(Question Bank)

1	Differentiate between Microprocessor and Microcontroller.
2	List out some embedded products using microcontrollers.
3	List and explain in brief the criteria for choosing a microcontroller.
4	With a neat diagram, explain the PSW register of 8051 microcontroller.
5	With a neat diagram, explain the internal RAM organization of 8051 microcontroller.
6	Calculate the machine cycle frequency and time period for the XTAL frequency given below: a) 11.0592 MHz b) 22 MHz c) 12 MHz d) 16 MHz
7	List and explain the various data types of 8051 in 'C'.
8	Write an 8051 C program to send values 00 – FF to port P1.
9	Write an 8051 C program to send hex values for ASCII characters of 0, 1, 2, 3, 4, 5, A, B, C, and D to port P1.
10	Write an 8051 C program to toggle all the bits of P1 continuously.
11	Write an 8051 C program to send values of –4 to +4 to port P1.
12	Write an 8051 C program to toggle bit D0 of the port P1 (P1.0) 50,000 times.
13	Which are the two different approaches to generate delay? Discuss the various factors associated with delay generation.
14	Write an 8051 C program to toggle bits of P1 continuously forever with some delay.
15	Write an 8051 C program to toggle bits of P1 ports continuously with a 250 ms.
16	Write an 8051 C program to get a byte of data form P1, wait ½ second, and then send it to P2.
17	Write an 8051 C program to get a byte of data form P0. If it is less than 100, send it to P1; otherwise, send it to P2.
18	Write an 8051 C program to toggle only bit P2.4 continuously without disturbing the rest of the bits of P2.
19	Write an 8051 C program to monitor bit P1.5. If it is high, send 55H to P0; otherwise, send AAH to P2.

20	A door sensor is connected to the P1.1 pin, and a buzzer is connected to P1.7. Write an 8051 C program to monitor the door sensor, and when it opens, sound the buzzer. You can sound the buzzer by sending a square wave of a few hundred Hz.
21	Write an 8051 C program to turn bit P1.5 on and off 50,000 times.
22	Write an 8051 C program to get the status of bit P1.0, save it, and send it to P2.7 continuously.
23	List out the various logical operators and bit wise operators of 8051 in 'C'.
24	Write an 8051 C program to toggle all the bits of P0 and P2 continuously with a 250 ms delay. Using the inverting and Ex-OR operators, respectively.
25	Write an 8051 C program to get bit P1.0 and send it to P2.7 after inverting it.
26	Write an 8051 C program to read the P1.0 and P1.1 bits and issue an ASCII character to P0 according to the following table. P1.1 P1.0 0 0 send '0' to P0 0 1 send '1' to P0 1 0 send '2' to P0 1 1 send '3' to P0
27	Write an 8051 C program to convert packed BCD 0x29 to ASCII and display the bytes on P1 and P2.
28	Write an 8051 C program to convert ASCII digits of '4' and '7' to packed BCD and display them on P1.
29	Write an 8051 C program to calculate the checksum byte for the data 25H, 62H, 3FH, and 52H.
30	Write an 8051 C program to perform the checksum operation to ensure data integrity. If data is good, send ASCII character 'G' to P0. Otherwise send 'B' to P0.
31	Write an 8051 C program to convert 11111101 (FD hex) to decimal and display the digits on P0, P1 and P2.