Embedded C Assignment

V. Shruthi
1SI18IA044G.

Short Answers.

(1) Define Embedded system?

An embedded system is an application that contains at least one programmable computer (typically in the form of a microcontroller, a microprocessor & digital signal processor chip) and which is used by individuals whose, in the main, unaware that the system is computer based.

(2) Describe dynamic RAM.

Dynamic RAM is a read-write memory technology that uses a small capacitor to store information. As the capacitor will discharge quite rapidly, it must be frequently refreshed to maintain the required info: circuitry on the chip takes care of this refresh activity.

(3) Explain timer operation of 8051 MC.

All members of 8051 family have atleast two timer/counter, known as timer 0 and timer 1: most also have an additional timer (Timer 2). There are 16-bit timer, which means they can hold values from 0 to 65535 (decimal).

(4) Explain external interrupt of 8051 MC.

The hardware mechanism used to notify a processor that an event has taken place: such events may be internal event or external interrupt.

(5) Datatypes used in embedded C.

unsigned char.
signed char.
unsigned int.
signed int.
sbit
sfr

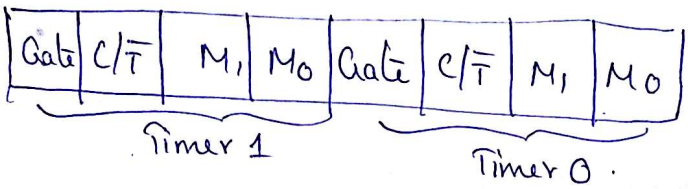
(6) Explain logical AND operation with c program.

```
#include <reg51.h>
void main (void)
{
  P0 = 0x35 & 0x1DF;
}
```

(7) Explain logical OR with c program.

```
#include <reg51.h>
void main (void)
{
  P0 = 0x35 | 0x68;
}
```

(8) Explain TMOD SFR.



(9) Give the magnitude of signed char.

Signed char is 8bit data type.
Range is -128 to 127.

(10) Give the magnitude of the unsigned char.

Unsigned char is 8bit data type in the range of (0-255) (00-FF).

Long Answers.

(1) Write 8051 c program to toggle all the bits of P0 & P2 continously with 250 ms.

```
#include <reg51.h>
void delay (unsigned int);
void main (void)
{
  unsigned P0 = 0x55;
```

```
delay (250);
P2 = 0x55;
}
void delay (unsigned int time)
{ unsigned int i, j;
  for (i=0; i<time; i++)
  for (j=0; j<1275; j++)
}
```

(2) Write C program to toggle bits of P1 continuously forever with some delay.

```
#include <reg51.h>
void delay (unsigned int);
void main (void)
{ while (1)
  { P1 = 0x55;
    delay (500);
    P1 = 0xAA;
    delay (500);
  }
}
void delay (unsigned int time)
{ unsigned int i, j;
  for (i=0; i<time; i++)
  for (j=0; j<1275; j++)
}
```

(3) Write an 8051 C program to convert ~~Asett digits 4 & 7~~ packed BCD 0x29 to ASCII and display the bytes on P1 & P2.

```
#include <reg51.h>.
void main (void)
{ unsigned char mybyte = 0x29;
  unsigned char x, Y, Z;
   x = mybyte & 0xF0;
   P1 = x | 0x30;
   Y = mybyte & 0xF0;
    Y = Y >> 4;
    P2 = Y | 0x30;
}.
```

(4) Write C program to convert 11111101 to decimal and display the digits on P0, P1 & P2.

```
#include <reg51.h>.
void main (void).
{ unsigned char mybyte = 0xFD;
  unsigned char x = mybyte / 10;
      P1 = x % 10;
      P2 = x / 10;
      P0 = mybyte % 10;
}.
```