

Name

Majid Mahmood.

ID

13876

Exm.

Summer Final

Subject.

Micro Controller.

Question no 1.

Answer:

Q) Difference b/w microprocessor and micro controller:

Microprocessor	Micro controller.
1) In Micro-processor external peripheral is the circuit.	2) In Micro Controller external peripheral are RAM, ROM, EEPROM.
2) M.P are bulky	2) M.C are sing chip.
3) M.P are expensive	3) M.C are cheap.
4) processing speed of M.P is 1giga Hz	4) Processing speed of M.C is 8mega Hz to 50 mega Hz.
5) M.P don't have power saving system.	5) M.C have power saving system.
6) Tasks perform by M.P are complex	6) Task perform by M.C are simple.
7) Micro processor are based on von Neuman modal.	7) Micro controller are base on Harved architecture

① Pin diagram of the Intel 8051 micro controller.

P1.0	□ 1	40	□ VCC
P1.1	□ 2	39	□ P0.0 (AD0)
P1.2	□ 3	38	□ P0.1 (AD1)
P1.3	□ 4	37	□ P0.2 (AD2)
P1.4	□ 5	36	□ P0.3 (AD3)
P1.5	□ 6	35	□ P0.4 (AD4)
P1.6	□ 7	34	□ P0.5 (AD5)
P1.7	□ 8	33	□ P0.6 (AD6)
RST	□ 9	32	□ P0.7 (AD7)
(RXD) P3.0	□ 10	31	□ $\overline{EA}/\overline{NPP}$
(TXD) P3.1	□ 11	30	□ ALE/ \overline{PROG}
($\overline{INT0}$) P3.2	□ 12	29	□ \overline{PSEN}
($\overline{INT1}$) P3.3	□ 13	28	□ P2.7 (A15)
(T0) P3.4	□ 14	27	□ P2.6 (A14)
(T1) (WR) P3.5	□ 15	26	□ P2.5 (A13)
(RXD) (WR) P3.6	□ 16	25	□ P2.4 (A12)
(RXD) (RD) P3.7	□ 17	24	□ P2.3 (A11)
XTAL2	□ 18	23	□ P2.2 (A10)
XTAL1	□ 19	22	□ P2.1 (A9)
GND	□ 20	21	□ P2.0 (A8)
	□		

② Hardware times Present in 8052:

there are three hardware times present in 8052. which T_0 , T_1 and T_3 . All these counters count up on negative going edges at their inputs.

② Dual role of Port 0, Port 2, Port 3.

Port 0.

Port 0 is also designated as AD0-AD7, as it can be used for both data and address handling. While connecting as 8051 to external memory, Port 0 can provide both address and data. The 8051 microcontroller then multiplexes the input as address or data in order to save pins.

Port 2

Besides working as I/O, Port P₂ is also used to provide 16-bit address bus for external memory.

Port 2 is also designated as (A8-A15). Port 2 is used for the upper 8-bit of the 16-bit address, and it cannot be used for I/O and this is the way any program code of external ROM is addressed.

Port 3.

Port 3 (Pin 10 through 17).

It is also of 8 bits and can be used as input/output.

This port provides some extremely important external signals.

P3.0 and P3.1 are RXD and TXD respectively and are collectively used for serial communication.

P3.2 and P3.3 pins are used for external interrupts.

e) Delay of 56.384

```
#include <reg-51.h>
void T1_Delay();
void main(void)
{
    while (1)
    {
        P1 = 0x55;
        T1_Delay();
        P1 = 0xAA;
        T1_Delay();
    }
}

void T1_Delay() {
    TMOD = 0x01;
    TLL = 0x00;
    TH1 = 0x35;
    TR = 1;
    while (TFO == 0);
    IRI = 0;
    TFI = 0;
}
```

f)

```
#include <reg-51.h>
sbit led = P0^0;
void timer_delay()
{
    TH0 = 0x4B;
    TL0 = 0xFD;
    TR0 = 1;
}
```

```

while (TFO == 0);
TF0 = 0;
TRO = 0;
}
void main
{
TMOD = 0x01;
while (1)
{
LED = 1;
timer Delay();
LED = 0;
timer Delay();
}
}

```

Question no 2.

Answer:

```

#include <reg 51.h>
Sbit button1 = P1^0;
Sbit button2 = P1^1;
Sbit out1 = P3^0;
Sbit out2 = P3^1;
void main ()
{
if (button1 == 0)
{
out1 = 1;
}
out2 = 1;
}

```

```
else
```

```
{
```

```
    out1 = 0;
```

```
    out2 = 0;
```

```
}
```

this code will be used for User 1.

User 2 code:

```
#include <reg51.h>
```

```
#define out P2
```

```
Sbit in1 = P1^0;
```

```
Sbit in2 = P1^1;
```

```
Unsigned Int num = 0x00;
```

```
int convert (void);
```

```
void delay (void);
```

```
void main()
```

```
{
```

```
    out = 0x00;
```

```
    while (1)
```

```
    {
```

```
        if (in1 == 1)
```

```
        {
```

```
            delay (1);
```

```
            num++
```

```
            out = convert ();
```

```
        }
```

```
    }
```

```
}
```

```
int convert ()
```

```
{
```

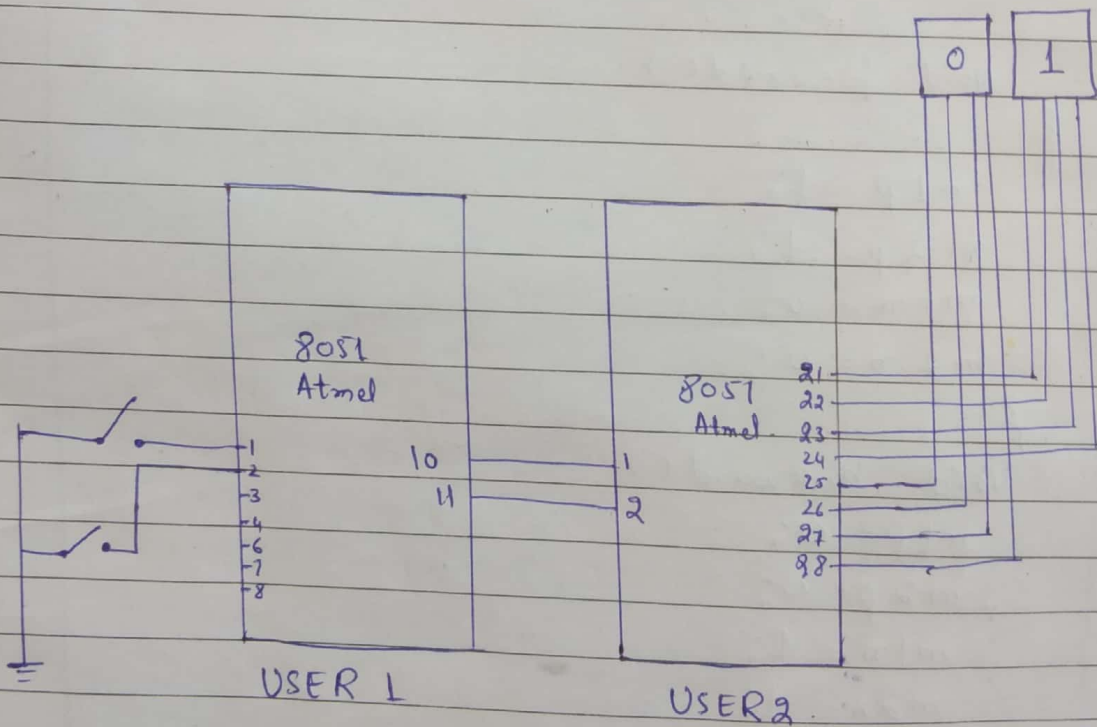
```
    unsigned int num1 = num * 10;
```

```

unsigned int num 2 = num/10;
return ((num 2 << 4) | num1);
}
void delay()
{
unsigned int i,j;
for (i=0; i<100; i++)
for (j=0; j<500; j++);
}

```

This code will be used by user 2 to receive the input from user 1.



Question no 3.

Ans:-

Code for transmitter which will transmit it to receiver.

```
#include <reg51.h>
```

```
Sbit m1p = P2^0; // m0
```

```
Sbit m1n = P2^1;
```

```
Sbit m2p = P2^2;
```

```
Sbit m2n = P2^3;
```

```
Sbit B = P1^0;
```

```
Sbit Ba = P1^1;
```

```
void forward()
```

```
{
```

```
  m1p = 1;
```

```
  m2p = 1;
```

```
  m1n = 0;
```

```
  m2n = 0;
```

```
}
```

```
void backward()
```

```
  m1p = 0;
```

```
  m2p = 0;
```

```
  m1n = 1;
```

```
  m2n = 1;
```

```
}
```

```
void stop()
```

```
{
```

```
  m1p = 0;
```

```
  m1n = 0;
```

```
  m2p = 0;
```

```
  m2n = 0;
```

```
}
```


Code for receiver which will receive connected from transmitter.

```
#include <reg51.h>
```

```
{
```

```
void main()
```

```
{
```

```
F=0;
```

```
Ba=0;
```

```
while (1)
```

```
{
```

```
if (F==1)
```

```
forward ();
```

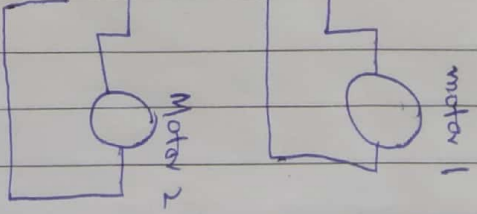
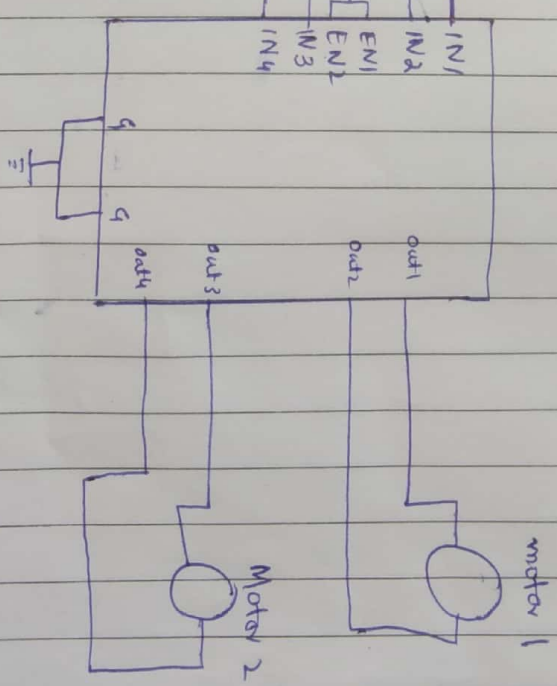
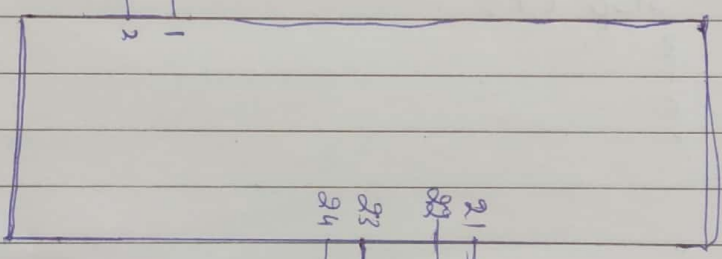
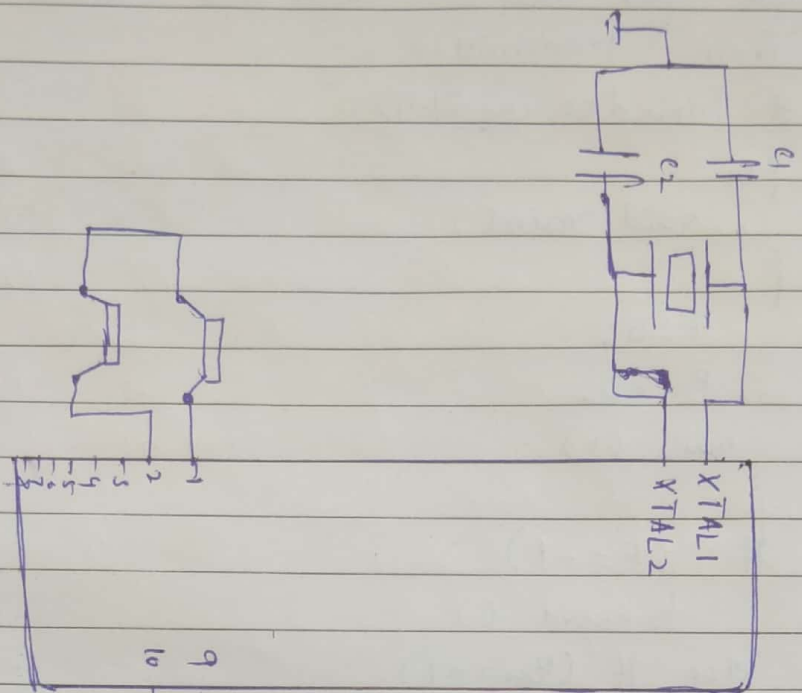
```
else if (Ba==1)
```

```
else
```

```
stop ();
```

```
}
```

```
}
```



Question no 4.

a)

Switch and the LED are connected with each other as an AND gate. When both are "1". The LED will turn off. After 100ms delay it will turn on. and if switch is on and after the 100ms delay it will turn on.

This process will continue until the loop ends.

Question no 4

part b).

Correct code

```
#include <reg50.h>
sbit SW1 = P3^1;
```

```
unsigned int i = 0;
void delay - ms(unsigned int x)
```

```
{
    unsigned int y, z;
```

```
    for (y = 0; y <= x; y++)
        for (z = 0; z <= 1275; z++);
```

```
}
```

```
void main()
```

```
{
```

```
    while(0)
```

```
{
```

```
    if (SW1 == 1)
```

```
        P3 = i++;
```

```
        delay - ms(1000);
```

```
    }
}
```