Iqra National University, Peshawar

Department of Electrical Engineering

Summer Final-Semeste 2020, Date: 30 / 09 / 2020

Course Code:_____ **Course Title: Microcontroller Systems & Interfacing**

Prerequisite:_____ **Instructor: Engr. Muhammad Waqas**

Module:_____ Program: BS(EE) **Total Marks: 50** **Time Allowed: 4 Hours**

Note: Attempt all Questions:

Q. NO.		Questions	Marks
1.		Write short notes of 4 lines MAX or bullet points on the following with examples	
	a)	Explain the difference between microprocessors and micro controller	2
	b)	Draw the pin diagram of the Intel 8051 micro controller.	2
	c)	How many hardware timers are present in 8052?	2
	d)	Explain the dual role of port 0, port 2, port 3.	2
	e)	Make an accurate delay of 56.384 ms using timer 1 in mode 1.	2
	f)	Make an accurate delay of 50 ms using timer 1 in mode 1.	2
2.		**You are asked to make a standalone communication link using two 8051 microcontrollers. One 8051 microcontroller will be with User1 while the other with User2. User1 will enter numbers which will be transmitted to User2 and will be displayed on User2's LCD Screen, and vice-versa on User1. Data should be sent and received through Serial Communication ONLY. Write the code in C-language and draw the circuit diagram.**	7+5

Q1 (a)

Microprocessor.

Consist of only a central processing unit. where as.

Microprocessor uses an external bus to interface to RAM, ROM, and other peripherals.

on the other hand.

Microcontroller.

uses an internal controlling Bus.

Microcontroller Contains a CPU. Memory I/O all integrated into one chip.

x——x——x——x——x——x

~~Ans Q1 (b)~~

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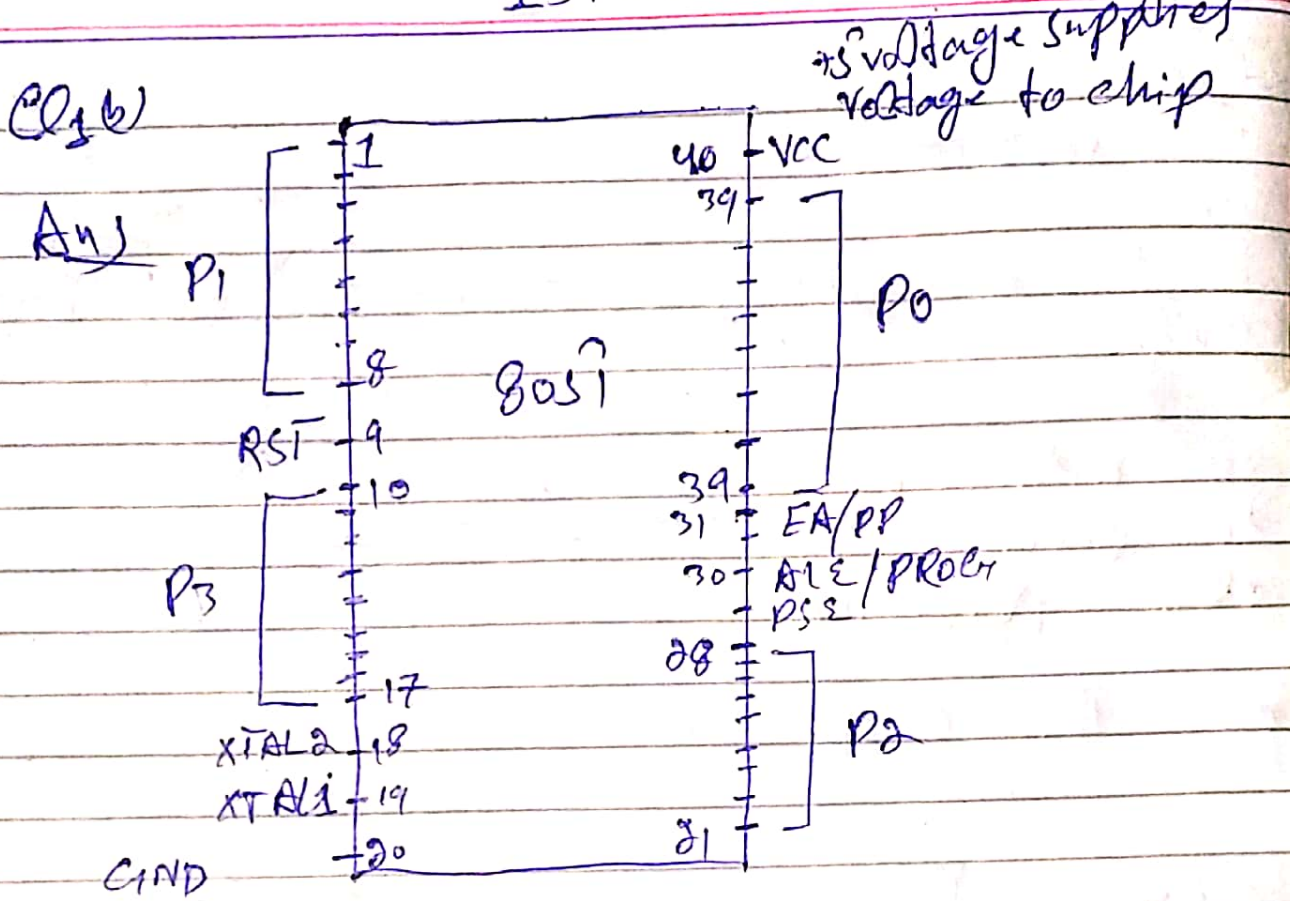
Q1(b)

Ans)



A Total 32 pins are set aside for the Four ports P0. P1 P2 and P3

where each ports Takes 8. pins.

Q1(c)

Ans

The 8052 has an additional

Timer T2.

All There counters Count up on negative going edges at their input.

Q1(d)

Ans The 8051 microcontroller they multiplexes the input as address or Data in Order to save pins.

Dual role of Port 2 - Besides working as I/O,

Port P2 is also used to provide 16 Bit address bus for external memory along with Port 0.

Port 3 is a multifunctional port it can be used as simple ~~input~~ input/output

The ~~Port~~ port 3 have three ~~specific~~ special Functions.

Q1 e

Ans

```
#include <reg51.h>
   Void T1 Delay;
Void main (void)

{
    while 1

{
     P1 = 0x55;
     T1 Delay( );
     P1 = 0xAA
    T1 Delay( );
  }
 }
    Void T1 Delay( ){
    TMOD = 0x00;
    TL1 = 0x00;
    TH1 = 0x35;
   TR1 = 1;

 while (TF0==0);
 TR1 = 0;
 TF1 = 0;
}
 }
```

Q1(f)

Ans)

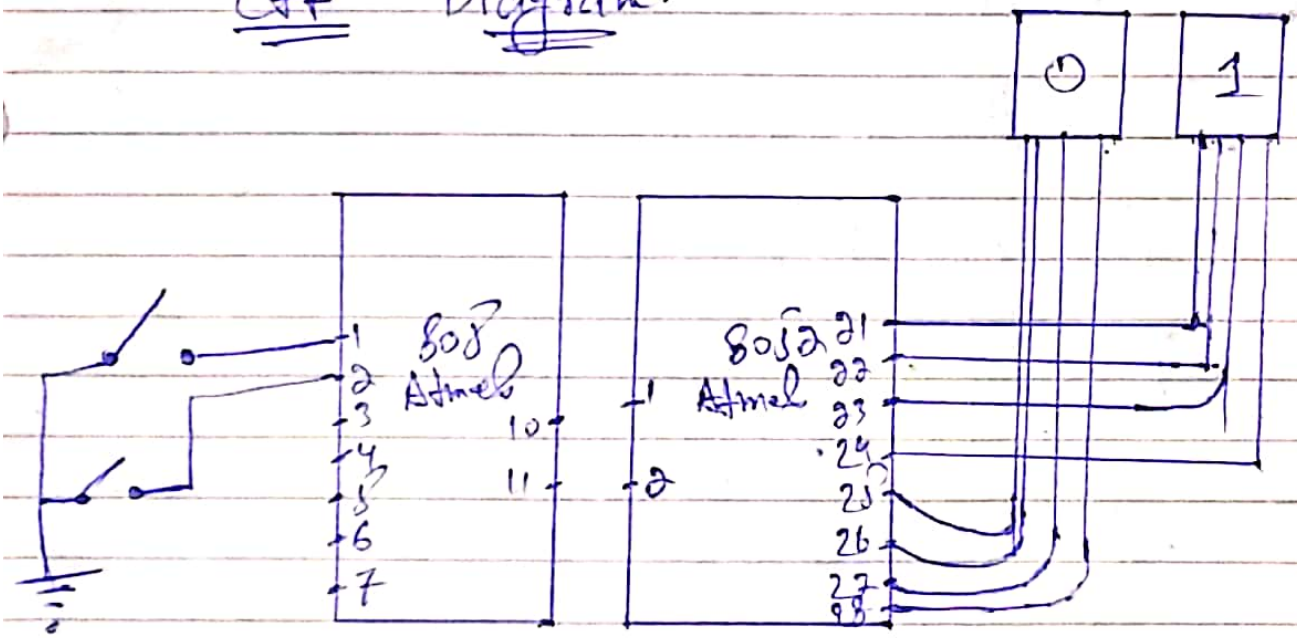
```
#include <reg51.h>
sbit Led = P0^0;
void Timer Delay ( )
{
 TH0 = 0x4B;
 TH0 = 0xFD;
 TR0 = 1;
while (TF0==0);
TF0 = 0;
TF0 = 0;
}

void main

{

TMOD=0x01;
while(1)
{
TF0=0x0
{
LED=1;
Timer Delay( );
LED=0;
Timer Delay( );
}
}
```

Q9 Ans

```
#include <reg51.h>

    sbit button1 = P1^0;
    sbit button2 = P1^1;
    sbit out1 = P3^0;
    sbit out2 = P3^1;

    void main ( )
{
    if (button1 == 0)
    {   out1 = 1;
    }
      if (button2 == 0)
    {   out  2 == 1;
    }
       else
{       out   1 = 0;
        Out   2 = 0;
}
       void  delay ( )
{   unsigned  int  i, j;
```

```
For (i=0; i<100; i++)
For (j=0; j<500; j++)
{
}
}.
```

C++ Diagram.



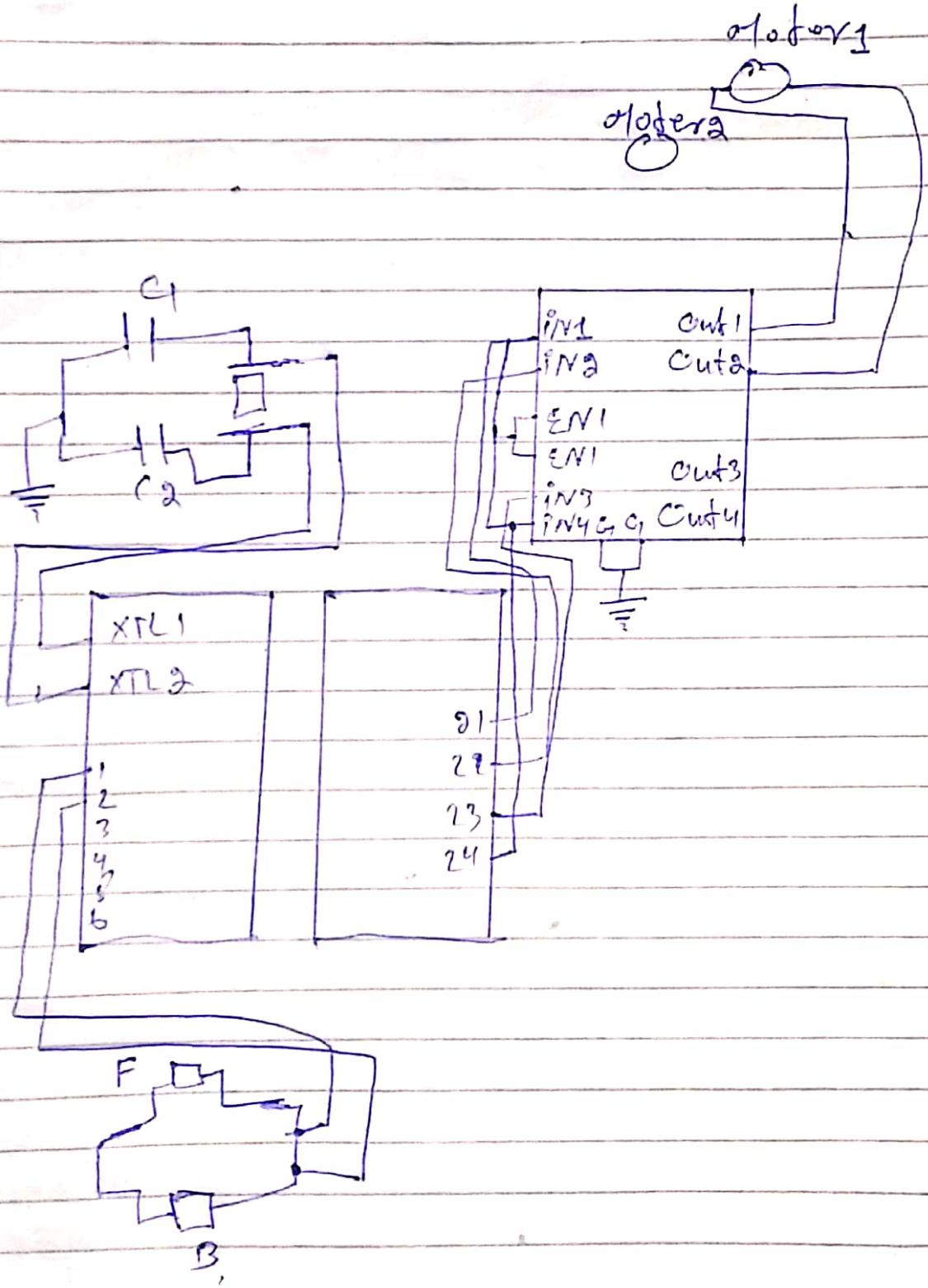
Q3

Ans

```
#include <reg51.h>

sbit m1p = P2^0;
sbit m1n = P2^1;
sbit m2p = P2^2;
sbit m2n = P2^3;

sbit F = P1^0;
sbit Ba = P1^1;

void forword( )
{
  m1p = 1;
  m2p = 1;
  m1n = 0;
  m2n = 0;
}
void backword( )
{
  m1p = 0;
  m2p = 0;
  m1n = 1;
  m2n = 1;
}
Void stop( )
```

```
{   m1p=0;
    m1n=0;
    m2p=0;
    m2n=0;
} recieve command from transmitter

#include <reg51.h>
{
    void main()
{
    F=0;
    Ba=0;
  while(1)
{
    if(F==1)
    Forword
else if(Ba==1)
  backword();
  else
    stop();
}
}
}.
```

Circuit Diagram



Q4

Ans switch and the LED are connected with each other as an AND Gate.

when both are "1"

The LED 2 will turn ON.

And if switch is ~~not~~ ON and the LED 1 is OFF.

The LED2 will turn ON and After the 100ms delay.

it will turn ON. This process the until the LOOP ends.

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Q4(b) finding Error.

```
#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(1)
{
  while(0)
{

If (sw1==1)

P3 = i++;

delay_ms(1000);
}
}
```