Date:

Department of Electrical Engineering

Subject: Microcontroller and Embedded System.

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Q 1 Part (a)

What is pull-up resister? How do we use pull-up resister with 8051 Microcontroller? Draw the circuit diagram.

Ans: Pull-up resistor:

Electronic logic CKt a pull-resistor or pull-down resistor used to ensure a known state for a signal. used in physically combination with com components such as switch and Transistor. which physically interrupt the connection of subsequent component to ground Vcc

→ use pull-up resistor with 8051.

When the GPIO voltage level that is low then it is in high or high impedance state then the pull up and pull-down resistor are used to ensure GPIO which is always in a valid state. usally the GPIO is arranged on the a mist mircrocontroller. as.

Diagram:

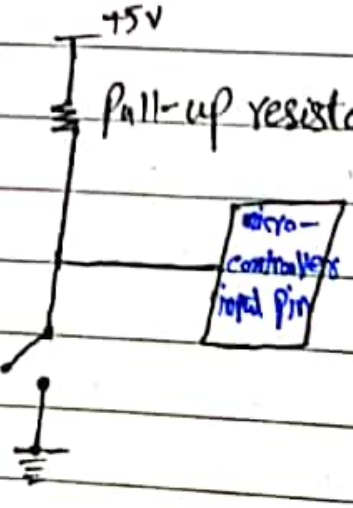
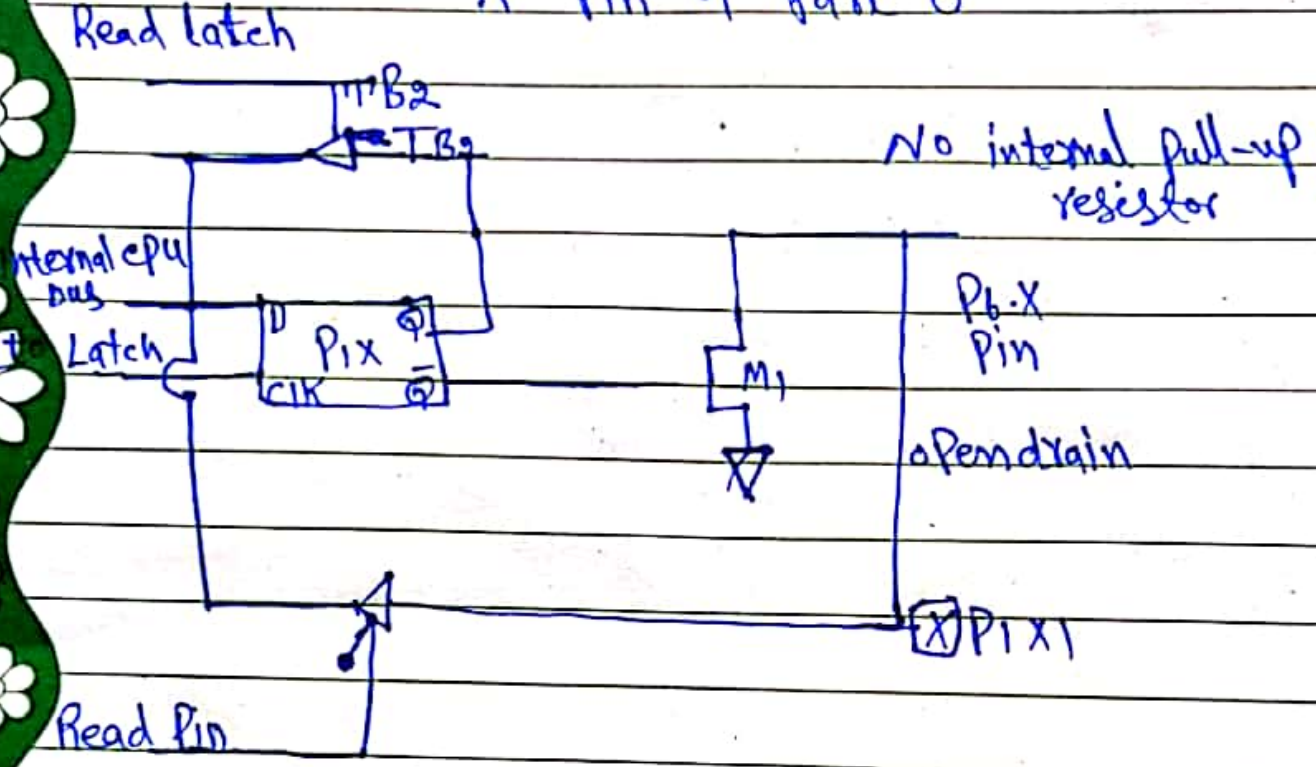


Diagram:

A Pin of Port 0



8051 IC

Q1 Part B(b)

What is pull-down resistor? How do we use pull-down resistor with 8051 Microcontroller? Draw the circuit diagram.

Ans:

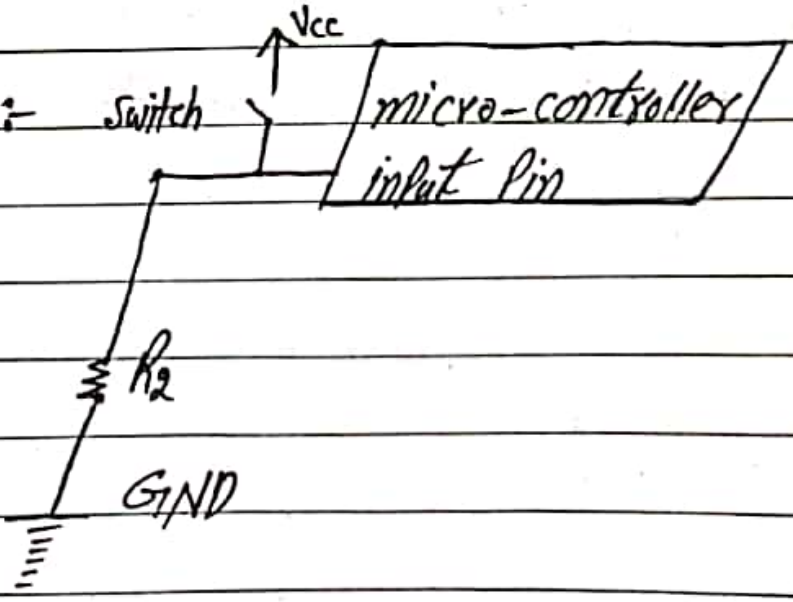
Pull-down resistor:

A pull-down resistor connect input pins (OR and NOR gates) to grand (0V) to keep the given input Low. The resistance value for a pull-up resistor is not usually that criticall but most maintain the input pin voltage above Vin.

When the GPIO voltage load is low than it is in high or high

Impedance state then the pull-up or pull-down resistance are used to ensure GPIO which is always are used to ensure GPIO is arranged on a microcontroller as I/O.

circuit diagram:-



Q # 1 Part C:

How many hardware timers are present in 8052?

The 8052 has an additional Timer. T2. All These counters count up on negative going edges at their input.

Q1 Part(d) [illegible]:

How many input/output ports are in an 89c51 microcontroller.?

Ans:

8051 microcontroller have 4 I/o ports each of 8-bit which can be configured as input or output. Hence total 32 input/output pin allow the microcontroller to be connected with the peripheral devices. An configuration i.e The pin can be configured as 1 for input and 0 for output as per the logic state.

Q.1. Part (e)

What is the difference between a microcontroller and a microprocessor?

Ans: Microprocessor:

Microprocessor consists of only a central processing unit whereas Microcontroller contains a cpu memory I/O all integrated into one chip microprocessor uses an external bus to interface. intel (core) ch to RAM, ROM and other peripherals on the other hand

Microcontroller: use an internal controlling bus.

Brain of the computer system.
used to Application specific system
simple and inexpensive with less
number of instruction to process.

Q# 1 (B)

Convert the following to their respective bases:

(a): $89501_{10} = ?_8$

8	89501
8	11187 -5
8	1398 -3
8	174 -6
8	21 -6
	2 -5

$89501_{10} = (256635)_8$

Ans/

Q1 Part (B)

(b) $6401_{10} = ?_2$

6401
3250 – 1
1625 – 0
812 – 1
406 – 0
203 – 0
101 – 1
50 – 1
25 – 0
12 – 1
6 – 0
3 – 0
1 – 1

$6401_{10} = (1100101100101)_2$

Ans

Q1 Part B

(C) $9AB.3_{16} = ?_2$

Solution:

0001 0110 0001 1011

1 6 1 B

on the table

$= 161B.$

$9AB.3_{16} = (161B)_2$

Ans

Binary	Hexadecimal
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B
1100	C

Q1 Part (B)

(d): $1110100100111_2 = ?_8$

Solution

001 110 100 100 111

1 6 4 4 7 on the table:

$(1110100100111)_2 = (16447)_8$

Q1 Part B:

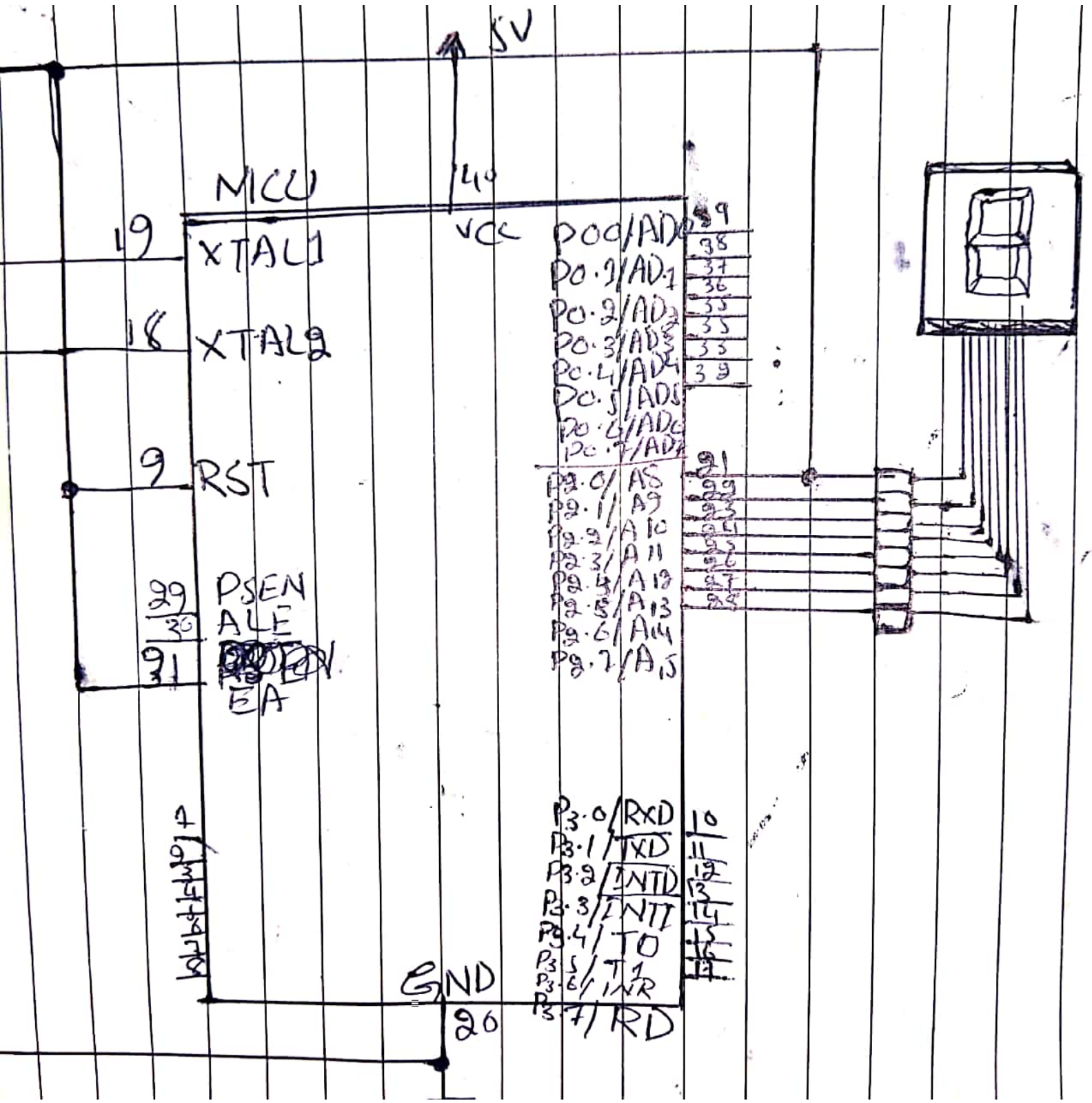
(e): $1011000011011_2 = ?_{16}$

Solution:

1011 0000 1011
B 0 B

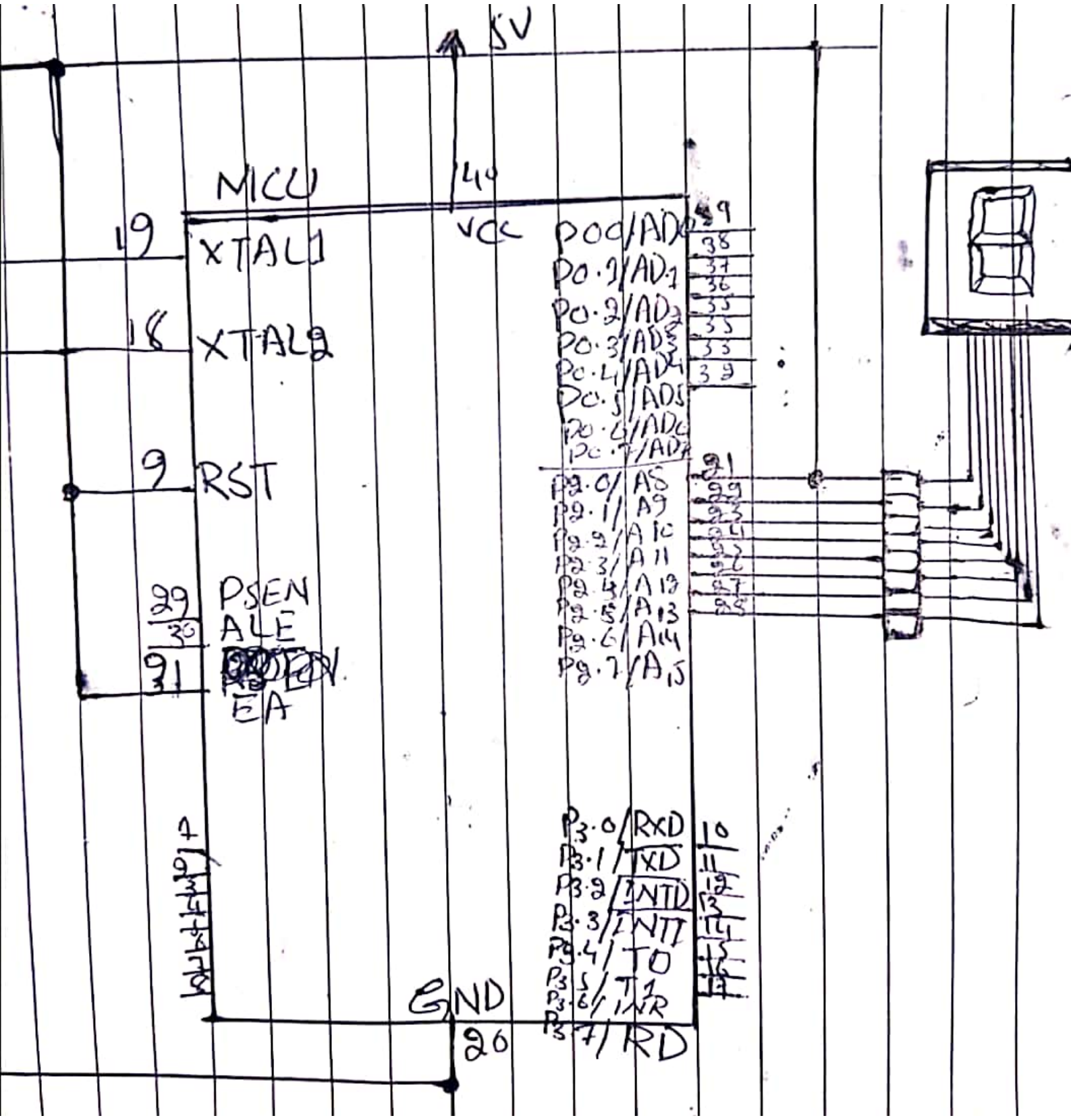
$(1011000010111)_2 = (B0B)_{16}$

Ans



```
void delay int (x).,
sbit switch = 0.,
int x, y.,
void main ()
{
if (switch = =0) on state
green led = 1..
red led= 0.,
}
if else switch = = 1) off state
{
 green ied = 0.,
 red led = 1.,
}
else
{
```

```
green led = 0;
red led = 0;
}
```



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Q2 Part: B:

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
int IR_1 = 5; // exit
int IR_2 = 4; // enter
int counter = 0;
int currentstate = 0;
int previous,state_1 = 0;
int previousstate_2 = 0;
int IR_1_of;
int IR_2_of;
void setup (){
```

```
// put your setup code here, to
Serial.begin(9600);
pinMode IR_1, (INPUT);
pinMode IR_2, INPUT);
lcd.begin(16,2);
}
void Loop() {
// put your main code here to run
repeatedly.
lcd.setCursor(0,0);
lcd.print(No.of CARS.");
lcd.setcursor(0,1);
lcd.print("CAR");
IR_1_of= digitalRead(IR_1);
IR_2_of= digitalRead(IR_2);
```

```
Serial.println(digitalRead IR_2));
if IR_1_of== HIGH && IR_2_of==
{
current state = 1;
}
else
{
currentstate = 0;
}
if (currentstate != previousstate_1)
{
if (currentstate == =1)
{
counter= Counter +1;
lcd.setcursor(13,0)
lcd print (counter);
lcd.setcursor(4,1);
lcd.print ("ENTER");
}
}
```

```
Previous_state_1 = current_state;
delay(250);
Serial.println(counter);
if IR_1_op == Low && IR_2_op == HIGH
{
current_state = 1;
}
else
{
current_state = 0;
}
if current_state != Previous_state_2
{
if ( current_state == 1 );
lcd.setcursor (13,0);
lcd.print(counter);
lcd.set cursor(4,1);
lcd.print ("LEAVE");
}
}
Previous state_2 = current state;
```

```
Serial.print(counter);
}
```

Q3: Part A

```
#Include < reg 50.h >
Sbit sbit led = P2^7.;

Void delay unsigned char){
   unsigned y, z
for ( y=0; y=<y.; y++)
    for(z=0.; z<=1275.; z++)
}
  void main ( )
{
  while (1)
  Led ( ).;
  Delay ( ).;
  Led=1.;
  Delay(350).;
```

}

}

The Paper End.