Page No.:
Date:

Name - Khushi Nitinkumar Patel.
PRN - 2020BTECS00037.

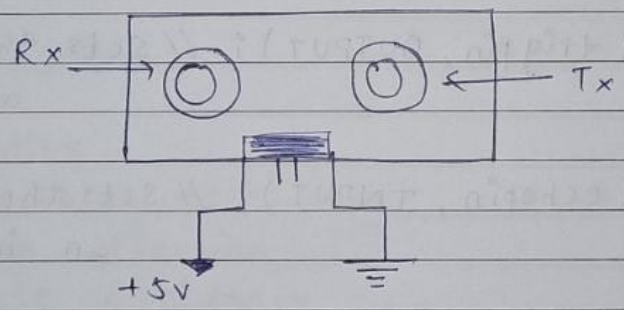
Experiment no - 5.

→ Aim - To interface ultrasonic sensor with arduino for distance measurement.

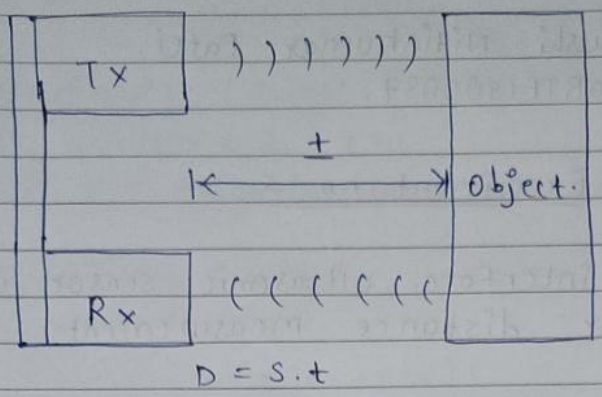
→ Procedure - ultrasonic sensor - HCSR04

~~Trig - high state for t~~

- using ultrasonic waves (refle, transm).
  $D = S \cdot t$
- (HCSR 04) → ultrasonic sensors.
  4pins [Vcc, Ground, trigger (for trans), Echo (receiver)]
  eg :- D = 10cm speed 340m/s = 0.034 cm/microsecond.
  $D = S \cdot t$, $t = D/S$ = 29.4 micro second.
  $\therefore D = S \cdot t \ 1/2 = 5$ cm.



any digital I/O pins of arduino.



→ Code.

```
const int trigpin = 9;
const int echopin = 10;

long duration;
int distance;
```

setup.-

```
Pinmode(trigpin, OUTPUT); // sets the trigpin as
                             an output.

Pinmode (echopin, INPUT); // sets the echopin as
                             an input.

Serial.begin (9600); // starts the serial communication
```

Page No.:
Date:

loop -

```
digitalwrite (trigpin, LOW);
delay Microseconds (2);
//sets the trigopin on HIGH state for 10 microsecon
digitalwrite (trigpin, HIGH);
delay Microseconds(10);
delaywrite (trigpin, LOW);
// Read the echopin, returns the soundwave
travel time in microseconds.
duration = Pulse In (echopin, HIGH);
// calculating the distance
distance = duration x 0.034/2;
// Prints the distance on a serial monitor.
Serial. Print ("Distance");
Serial. print ("Distance");
delay (5000);
```

→ Applications -

1. Proximity
2. Self Parking technology
3. collision detection.
4. obstacle avoidance
5. levels of liquid.

→ conclusion - By using ultrasonic sensor we can measure distance easily with help of arduino.