**Microprocessor Lab**

Laboratory Activity No. 1

**Familiarization with TinkerCAD**

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Score

*Submitted by:*

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**S, 10:00 AM – 1:00 PM / CPE 0412.1-1**

*Date Submitted*

**16-09-2023**

*Submitted to:*

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1. Exercise

a. A process in Tinkercad where we can develop electronic circuits that can be quickly updated, modified and tested is called **Prototyping**.

b. In Tinkercad, **Start/Stop Simulation** tests the working of the circuits and the components.

c. The device used to assemble and connect the various components is known as **Breadboard**.

d. In an electronic circuit with LED, the positive end of the circuit should be connected to

**anode** and negative end should be connected to **cathode** of the LED.

e. A **resistor** is used to restrict the flow of current to electrical components.

2. Label the following:

1. Anode and Cathode in a LED



**Anode**

**Cathode**

1. Different parts of breadboard



**Edge**

**Main Area**

**Edge**

1. List the electronic components used in a circuit assembly

Components labeled under “Basic” category in Tinkercad include:

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| Component | Description | Tinkercad |
| Resistor | * Resists the flow of current, resulting in decrease in voltage and current. |  |
| LED | * Produces light upon passing of electricity in right direction. |  |
| Pushbutton | * Connects two points upon pressing. |  |
| Potentiometer | * A type of resistor that makes use of a knob to vary resistance. |  |
| Capacitor | * Stores and releases energy. |  |
| Slideswitch | * A switch that can be assigned either open or closed. |  |
| Battery (1.5V, Coin Cell 3V, 9V) | * 9V: supplies energy for higher power applications * Coin Cell 3V: for low power components such as LEDs * 1.5V: also referred to as standard AA or AAA batteries |  |
| Breadboard | * Allows assembly and connection of various electrical components. |  |
| micro:bit | * A programmable board utilize in creation of interactive circuits. |  |
| Arduino Uno R3 | * A board that can load programs to incorporate with circuits. |  |
| Vibration Motor | * A motor that vibrates when energy pass through. |  |
| DC Motor | * Motor that converts electrical energy to mechanical energy. |  |
| Micro Servo | * A motor that can be rotated using a microcontroller. |  |
| Hobby Gearmotor | * A geared motor that offers torque at low speed to drive robot wheels. |  |
| NPN Transistor (BJT) | * Used to amplify or switch or switch electronic signals; transfers weak signal from low to high resistance circuit. |  |
| LED RGB | * Combination of Red, Green, and Blue to produce any color, |  |
| Diode | * Conducts electricity in only one direction. |  |
| Photoresistor | * Sensor that varies its resistance depending on detected amount of light. |  |
| Soil Moisture Sensor | * Measures water content present in the soil. |  |
| Ultrasonic Distance Sensor | * Emits ultrasonic sound waves to measure distance from target. |  |
| PIR Sensor | * Component used to detect motion through reception of infrared radiation. |  |
| Piezo | * A buzzer that produces noise at varying frequencies. |  |
| Temperature Sensor (TMP 36) | * Produces voltage output proportional to the Celsius temperature. |  |
| Multimeter | * Used to measure voltage, resistance, and current in a circuit. |  |