**Microprocessor Lab**

Laboratory Activity No. 1

**Familiarization with TinkerCAD**

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Score

*Submitted by:*

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**Saturday 10:00 AM – 1:00 PM / CPE 0412.1-1 Microprocessors**

*Date Submitted*

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*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



Terminal Rails

Power Rails

Central Divider

Power Bus

Ground Bus

1. List the electronic components used in a circuit assembly
2. Resistor – Inhibits the flow of current thus used to control the flow of electrical current. They come in a variety of values, which are measured in ohms (Ω).
3. LED – They are semiconductor devices that emit light when current flows through them.
4. Push button – A switch that completes an electrical circuit when pressed and often breaks the circuit when released.
5. Potentiometer – A variable resistor that can be rotated to control the current within a circuit.
6. Capacitor – Used to stores electrical energy in an electric field. They come in a variety of values, which are measured in farads (F).
7. Inductors – Used to store energy in a magnetic field. They come in a variety of values, which are measured in henries (H).
8. Transistors - are semiconductor devices that can amplify or switch electrical signals.
9. Diodes – allow current to flow in one direction but not the other.
10. Slide switch - A switch where the handle can be slid into different positions to control the circuit.
11. 9V Battery - A battery that supplies an electrical potential of 9 volts.
12. Coin Cell 3V Battery - A compact battery commonly used in small electronic devices, providing 3 volts.
13. Connectors/Wires - are used to connect different parts of a circuit together.
14. 1.5V Battery - A battery that supplies an electrical potential of 1.5 volts.
15. Breadboard - A tool that makes it possible to prototype circuit without soldering.
16. Micro:bit - a small, adaptable microcontroller created for use in teaching and by those new to electronics.
17. Sensors – are devices that convert physical quantities, such as temperature, pressure, and light, into electrical signals.
18. Arduino Uno R3 - An open-source microcontroller board used for creating digital devices and interactive projects.
19. Vibration Motor - A motor that generates vibrations, often used in mobile devices for alerts.
20. DC Motor - A device converting direct current (DC) electrical energy into mechanical energy.
21. Micro Servo - A small, motorized device with a controllable output shaft position.
22. Multimeter - used to measure voltage, current, and resistance in electronic circuits.
23. Hobby Gearmotor - A motor that transforms electrical energy into motion and is appropriate for DIY applications.
24. NPN Transistor (BJT) - A type of bipolar junction transistor that permits current flow when a positive voltage is applied to its base.
25. RGB LED - A type of light-emitting diode (LED) that combines red, green, and blue light to create a variety of colors.
26. Photoresistor - A resistor that changes its resistance based on the amount of light it receives.
27. Soil Moisture Sensor - A device measuring the moisture content in soil.
28. Ultrasonic Distance Sensor - A sensor that uses ultrasonic waves to measure distance.
29. PIR Sensor - A motion sensor that uses infrared radiation to detect moving objects, especially people.
30. Piezo Buzzer - A device generating sound through the piezoelectric effect.
31. Temperature Sensor - A sensor measuring temperature and generates analog voltage.