University of Global Village (UGV), Barishal

Practical Skill Development and Assessment Process form (PSDAP)

Name of Subject: Electronics-I sessional **Department: EEE**

Subject Code: EEE-0714-1202 **Semester: 2nd**

Student Name: **Session:**

Student Id: **Section:**

Credit: 1 **Total Marks: 50**

Obtain Marks:

SL No:	Title of Practical Skills	Details of Practical Skills	Date of Execute	Expriment wise mark Allocation		Marks Obtain (Pass mark-80%)		Status		Name of the Instructor/Lab Asst./Lab Expert	Signature of Instructor/Lab Asst./Lab Expert	Signature of External
				Cont. Assessment	Finl Assessment	Cont. Assessment	Final Assessment	C	NC			
1.	**Study of P-N Junction Diode Characteristics**	**1. Description:** This experiment explores how a diode acts as a simple "one-way valve" for electricity, allowing current to flow in one direction but blocking it in the other. **2. What to do:** Apply voltage in the "Forward Bias" direction to find the point where current starts to flow (the knee voltage). Then, apply voltage in "Reverse Bias" and observe minimal current flow. **3. What to use:** PN Junction Diode (e.g., 1N4007), DC Power Supply, Multimeters (ammeter and voltmeter), Resistor, Breadboard.										

		4. Outcome: A V-I graph showing sharp conduction in one direction and almost zero conduction in the other.										
2.	**Characteristics of Zener Diode and Its Application as a Voltage Regulator**	1. Description: This experiment shows how a Zener diode acts as a "pressure relief valve," allowing backward current flow at a specific voltage to keep a circuit steady. 2. What to do: Connect the diode in reverse bias. Increase input voltage and note the "Breakdown Voltage" (Vzcap V sub z Vz). Test how the output voltage stays constant even when the input changes. 3. What to use: Zener Diode (e.g., 5.1V 1N4733A), Variable Power Supply, Series Resistor, Two Multimeters. 4. Outcome: A stable, regulated output voltage, demonstrating protection against power surges.										
3.	**Design and Performance Analysis of Half-Wave and Full-Wave Rectifier Circuits**	1. Description: This experiment compares two circuits that convert "Alternating Current (AC)" into a pulsating "Direct Current (DC)." Half-wave uses half the power; full-wave uses the entire cycle efficiently. 2. What to do: Build both										

		circuits and use an oscilloscope to compare the output waves. Measure the "Ripple Factor" (how bumpy the DC is) and overall "Efficiency" of each design. 3. What to use: Diodes, Step-down Transformer, Load Resistor, Filter Capacitor, Oscilloscope. 4. Outcome: Observation of two different DC signals with the full-wave circuit providing a smoother, stronger output.										
4.	**Design and Performance Analysis of a Bridge Rectifier Circuit**	1. Description: This experiment focuses on the common "Bridge Rectifier," which uses four diodes to efficiently convert the full AC input wave into DC power. 2. What to do: Assemble the four-diode bridge. Observe how the circuit "flips" the negative AC wave to the positive side. Measure the output "Ripple Voltage" and apply a capacitor for "Smoothing." 3. What to use: Four Diodes (e.g., 1N4007), Transformer, Load Resistor, Filter Capacitor, Oscilloscope. 4. Outcome: A clean, steady DC power source for powering electronic devices.										

5.	**Study of Clipper and Clamper Circuits**	1. Description: This experiment explores two ways to shape signals. Clippers cut off parts of a wave; Clampers shift the entire wave up or down (adding DC offset). 2. What to do: Build a clipper to remove signal peaks. Build a clamper to shift the signal's baseline. Use an oscilloscope to compare inputs and outputs. 3. What to use: Diodes, Resistors, Capacitor, Signal Generator, DC Bias Supply, Oscilloscope. 4. Outcome: The ability to modify signal amplitude and baseline to protect circuits or shape waveforms.										
6.	**Study of BJT as a Switch**	1. Description: This experiment shows how a BJT can function as a fast, reliable "electronic switch" with no moving parts. 2. What to do: Drive the transistor between the "Cut-off" (OFF) and "Saturation" (ON) regions. Use an input signal to control a load like an LED. 3. What to use: NPN Transistor, DC Power Supply, LED (as a load), Current-limiting Resistors, Input Switch. 4. Outcome: A circuit that uses										

		a low-power signal to control a higher-power load.										
7.	**Study of MOSFET as a Switch**	1. Description: This experiment demonstrates the MOSFET's application as a highly efficient, voltage-triggered "digital switch" for modern electronics. 2. What to do: Toggle the "Gate Voltage" between below and above the threshold. Observe the rapid switching of a load between "Cut-off" and "Ohmic" regions. 3. What to use: Power MOSFET (e.g., IRF540), DC Power Supply, Load (e.g., Motor or Lamp), Gate Resistor. 4. Outcome: Efficient control of high-power devices using a simple, low-power voltage signal.										