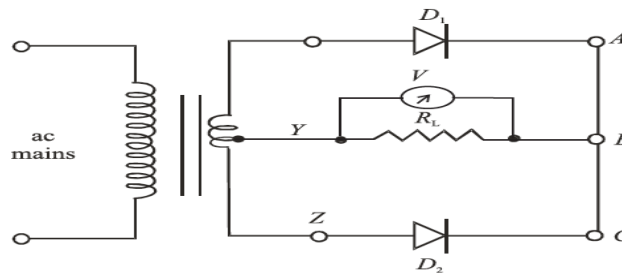


National Institute of Open Schooling
Senior Secondary
Lesson 29 – Applications of Semiconductor Devices
WORKSHEET – 29

Q1. In order to charge a laptop or a cell phone, we require dc current. The current received at homes is ac current at 50 Hz. Explain in your own words how use of a simple p-n junction diode can help in achieving this. What is this process known as?

Q2. Consider the circuit diagram as shown in the figure below and answer the following in your own words -



- a. Name the device whose working is depicted in the figure.
- b. Graphically represent input voltage signal and the corresponding output voltage signal?
- c. What is the significance of Peak Inverse Voltage (PIV)?

Q3. You are familiar with voltage regulators found in devices such as computer, automobile alternators and central power station generator plants, designed to automatically maintain a constant voltage. Explain in your own words how a Zener diode works as a voltage regulator.

- a. Suggest advantages of using Zener diode in place of a rectifier with filter circuit for voltage regulation.
- b. What would happen to the quality of sound in an amplifier if the voltage supplied is fluctuating?

Q4. List two devices in your home which require a constant power supply. Draw an appropriate circuit diagram showing the working of these devices.

Q5. Observe the electrical appliances available at your home. List 4 different devices using transistors in their basic circuitry. Look out the use of transistors in those devices as switch, amplifier or oscillator. Make a table suggesting the use of transistor in that device.

Name of Electrical Appliance	Use of Transistor As

Q6. Identify the Logic Gate on the basis of the truth table mentioned below and write its Boolean expression.

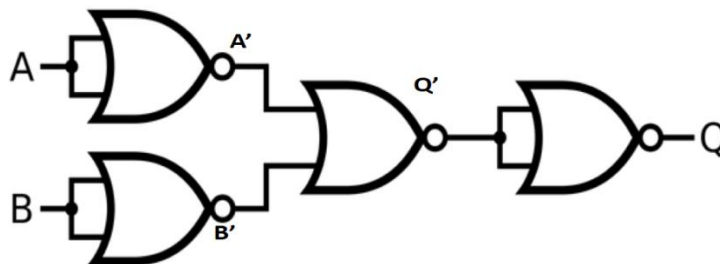
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

Design the circuit diagram using the basic Logic Gates to realize the above truth table.

Q7. Look out for a loudspeaker available in your vicinity. Identify how a transistor is being used in CE configuration to get amplification. Draw the input and output characteristics of a transistor in CE configuration.

Q8. Look at the circuit diagram shown below. Complete the truth table based on the Logic Gate shown below and identifies the Boolean expression and the Logic Gate formed.

A	B	A'	B'	Q'	Q
0	0				
0	1				
1	0				
1	1				



Q9. In our modern society, extensive use of electricity has enabled various uses of transistors in every electronic circuit. Transistors are used in our day to day lives in many forms. Observe and write what are the various applications and uses of transistor in daily life?

Q10. Explain in your own words how to realize a NOT Gate using transistors. Explain working of a Colpitt's oscillator using the circuit diagram.