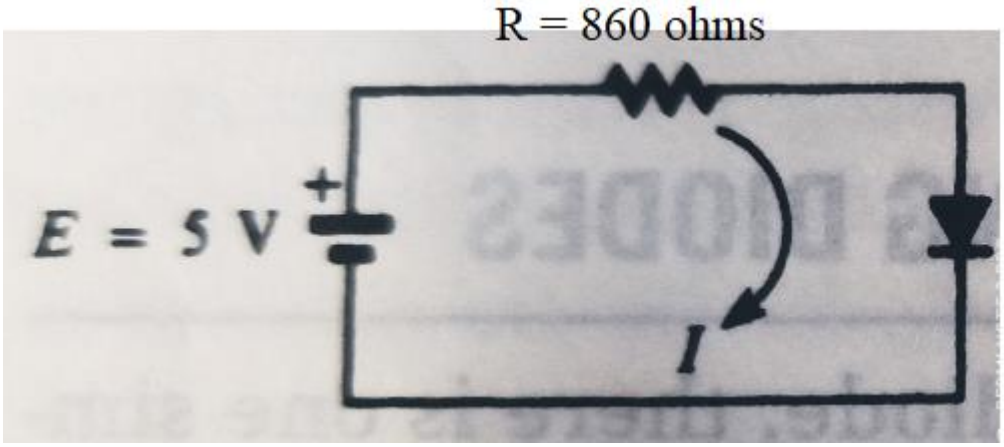
School of Electrical and Electronics Engineering
CIA I Examinations May 2021
Class: I B. Tech (CSBS)

Course Code: EIE 110 **Course name: principles of Electronics**
Duration: 90 Min **Max Marks: 50**

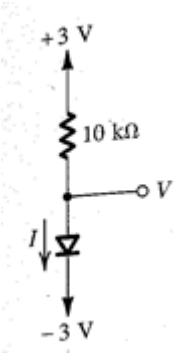
ANSWER ALL QUESTIONS

PART – A **10 * 02 = 20**

1. You have been issued with certain materials, and you are being asked to classify those materials based on their electrical conductivity. You know the number of electrons present in the materials. How do you achieve the task?
2. Draw the circular orbit arrangement of silicon atom.
3. What is meant by covalent bond in semiconductors? Illustrate the diagrammatic representation of any one of the semiconductors.
4. Distinguish between drift and diffusion current.
5. A sinusoidal voltage having a peak value of 20 V is applied to the cathode of an ideal diode. The anode of the diode is connected to the 2 KΩ resistor. The other end of the resistor is grounded. Sketch the voltage across 2 KΩ resistor.
6. Determine the current I in the following circuit assuming the diode is made up of silicon and its internal resistance is zero.



7. What are two different breakdowns occur in the reverse bias of the PN junction? Differentiate both of them.
8. Assume that you have constructed an electronic circuit by using precise and sophisticated devices which is operated by DC voltage. You have to protect the circuit from the spike and excessive voltages. How do you achieve your task using the simple electronic device you have studied so far?
9. The circuit given below is designed with a silicon diode. Apply your basic knowledge on the characteristics of the diodes determine the output voltage V and current I. Assume the diode is ideal



10. What is meant by static and dynamic resistances of the forward biased diode. Briefly explain them.

PART – B **3 * 10 = 30**

11. With a neat schematic and circuit diagram, explain in detail the Volt – Ampere characteristics of PN junction diode. Draw the necessary waveforms.
12. A rectifier circuit is having a single diode with internal resistance of 20 ohms and load resistance of 1000 ohms. This circuit is supplied by a source of 110 V (measured using a meter). Determine a) Peak value of the load current, b) Average value of the load current, c) RMS value of the load current, d) Total input power to the circuit, e) Average voltage across the load resistor.
13. Derive the expressions for the RMS value and average value of current, ripple factor, rectifier efficiency for the full wave rectifier circuit which uses only two diodes.