

**Faculty of Science**  
**B. Sc (Electronics) I-Year, CBCS –II Semester**  
**Regular Examinations -June/July, 2022**  
**Paper-II: Electronics Devices**

Time: 3 Hours

Max Marks: 80

**Section-A**

- I. Answer any *eight* of the following (8x4=32 Marks)
1. How does the reverse saturation current in a p-n junction diode vary with temperature.
  2. Write about varactor diode.
  3. The dielectric constant of Ge is 16. Calculate the barrier capacitance of P-N junction whose area is  $1 \times 10^{-6} \text{ m}^2$  and whose space charge thickness is  $2 \times 10^{-4} \text{ cm}$ .
  4. Define h-parameter and write a short note on them.
  5. Draw the circuit of self bias and explain.
  6. A transistor has  $I_{CBO} = 48 \text{ nA}$  and  $\alpha = 0.992$ . Find  $\beta$  and  $I_{CEO}$ .
  7. What are the advantages of FET.
  8. Explain why UJT is called double based diode.
  9. For a JFET type BFW10, the typical values of amplification factor and trans conductance are specified as 80 and  $200 \mu$ . Calculate the dynamic drain resistance of this JFET.
  10. How does SCR differ from an ordinary rectifier.
  11. Write about Photo voltaic cells.
  12. The forward break over voltage of an SCR is 150 volt when the gate current is 1m-A. Find the average power output when sinusoidal input voltage of peak value 200 volts is used.

**Section-B**

- II. Answer the following (4x12=48 Marks)
13. (a) Explain the construction, working and characteristics of a P-N junction diode.  
(OR)  
(b) Describe the construction and working of a tunnel diode. Sketch its V-I characteristics and indicate the negative resistance region.
  14. (a) Describe the experimental arrangement of CB configuration of transistor. Show the input and output characteristics.  
(OR)  
(b) Explain working of PNP and NPN transistors. And show that emitter current is addition of collector and base currents.
  15. (a) Describe the construction and working of a depletion MOSFET and explain their characteristics.  
(OR)  
(b) Explain the operation and construction of UJT. Draw its characteristics curve with the help of experimental setup.
  16. (a) Explain the construction and working of an SCR. Draw its V-I characteristics. Write its applications.  
(OR)  
(b) What is a light-emitting diode? Describe it. Mention its advantages and disadvantages. What are the important applications of an LED.

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