

Important Questions

- Q1.** Explain Superconductivity and effect of magnetic field on it.
- Q2.** Define relaxation time, collision time and mean free path. Derive mathematical relation between them.
- Q3.** Classify the types of conducting materials. Also discuss their properties.
- Q4.** Compare and explain electrical conductivity of metals, semiconductor and insulator on the basis of energy band diagram.
- Q5.** Explain and compare diffusion and transition capacitance in diodes.
- Q6.** Explain Zener Breakdown and Zener diode as voltage regulator.
- Q7.** Derive and explain the continuity equation in semiconductor.
- Q8.** Explain PN junction diode in biased and unbiased condition.
- Q9.** Explain thermal conductivity and how it is related to Wiedmann-Franz law.
- Q10.** Compare MOSFET, MISFET and MESFET.
- Q11.** Compare and contrast between BJT & FET.
- Q12.** Write short note on following: -
i) TRIAC ii) DIAC iii) IGBT iv) PNP diode
- Q13.** Explain the negative resistance in diode & explain tunnel diode in detail.
- Q14.** What do you mean by photoconductivity? Explain different types of photodiodes in detail.
- Q15.** Explain construction, operation, characteristics and application of MOSFET (n & p channel).
- Q16.** Compare CB, CC and CE configurations in detail.
- Q17.** Classify the types of conducting materials. Also discuss their properties.
- Q18.** Explain construction, working and characteristics of solar cell.
- Q19.** Explain the various steps involved in planar technology for device fabrication.
- Q20.** Explain construction, working and characteristics of TUNNEL diode.
- Q21.** Explain n & p channel FET with the help of diagram. Also, discuss I/P & O/P characteristics.
- Q22.** Explain breakdown mechanism and compare two types of breakdown in diodes.
- Q23.** Discuss in detail w.r.t. their working & application on GUNN & IMPATT Diode.
- Q24.** Compare D-MOSFET & E-MOSFET
- Q25.** Explain working of BJT as an amplifier.
- Q26.** Short answer questions: -
i. Define drift velocity and drift current.
ii. Why FET is unipolar while BJT is bipolar device.
iii. Explain the phenomenon of optical and electrical excitation in diode.
iv. Explain the concept & significance of negative resistance in diode.
v. Enlist the properties of photo-detectors.
vi. Why common collector configuration known as voltage buffer amplifier?
vii. Why SCR is known as silicon controlled rectifier.
viii. Explain and compare PIN and avalanche photodiode.
ix. Why FET is known as Voltage controlled and BJT as current controlled device.
x. Which type of semiconductor is used in manufacturing of LED and why?
xi. Why silicon is generally used in manufacturing diodes?
xii. Compare LED & LASER.