

## EDC

### QuestionBank

- 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.