

MODEL SHORT QUESTIONS (Common to ALL branches)

Course: B.Tech.

Subject: Engineering Physics II

Subject code: RAS201

UNIT I : CRYSTAL STRUCTURES & X-RAY DIFFRACTION

1. Define unit cell?
2. What are Bravais lattices? List the seven crystal systems and number of Bravais lattice for each of them.
3. Define coordination number.
4. Draw the planes for Miller Indices (100), (110) and (111).
5. What are the outcomes of Laue's X-ray diffraction experiment?
6. Why Compton shift is not observed for visible light. Explain the presence of unmodified radiation.

UNIT II : DIELECTRIC AND MAGNETIC PROPERTIES OF MATERIALS

1. What are dielectric materials? How do they differ from insulators? Define polarization
2. What is dielectric loss? Why dielectric loss does occur?
3. What is ferroelectricity?
4. What is piezoelectric effect in crystals?
5. Define magnetic susceptibility and magnetic permeability. Write relation between them.
6. What do you mean by coercivity and retentivity?

UNIT III : ELECTROMAGNETIC THEORY

1. What is displacement current? Why Maxwell proposed that Ampere's law require modification.
2. What are Maxwell's equations? Write down Maxwell's equations in differential form.
3. What is equation of continuity and what does it signify?
4. What is Poynting's vector? Write down the dimension of the magnitude of pointing vector.
5. What happens to an electromagnetic wave when it enters a conducting medium?
6. What is skin depth?

UNIT IV : BAND THEORY OF SOLIDS

1. What is band theory of solids?
2. What is effective mass of an electron?
3. What is Fermi-level?
4. Where does the position Fermi level lies in the intrinsic and extrinsic semi-conductors
5. How the Fermi level in intrinsic semiconductor depends on temperature?
6. How the conductivity of a semiconductor varies with temperature?

UNIT V : PHYSICS OF SOME TECHNOLOGICALLY IMPORTANT MATERIALS

1. What is persistent current?
2. Define Meissner effect.
3. What is cooper pair? Explain the formation of cooper pairs.
4. What is Josephson effect?
5. What is SQUID?
6. What is 1-2-3 superconductors?
7. What is nanoscience and nanotechnology?
8. How buckyballs are used as antioxidant?