# INDEX

## UNIT I

**Chapter 1 : Units and Measurements 1-1 to 1-23**

**Syllabus :**

**1.1** **Unit, physical quantities :** fundamental and derived quantities and their units

**1(a)** Describe the concept of given physical quantities with relevant unit of measurement.

**1.2** **Systems of unit :** CGS, MKS, FPS and SI

**1(b)** Explain various systems of units and their need for the measurement of the given physical quantities

**1.3** **Dimensions, dimensional formula :**

**1(c)** Determine the dimensions of the given physical quantities.

**1.4** **Errors, types of errors :** instrumental, systematic and random error, estimation of errors: absolute, relative and percentage error, significant figures

**1(d)** State the error in the given measurement with justification.


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**Chapter 2 : Electricity, Magnetism and Semiconductors 2-1 to 2-80**

**Syllabus :**

**2.1** Concept of charge, Coulomb's inverse square law, Electric field, Electric field intensity, potential and potential difference

**2(a)** Calculate electric field, potential and potential difference of the given static charge.

**2.2** Magnetic field and magnetic field intensity and its units, magnetic lines of force, magnetic flux.

**2(b)** Describe the concept of given magnetic intensity and flux with relevant units.

**2.3** Electric current, Ohm's law, specific resistance, laws of series and parallel combination of resistance, heating effecting of electric current.

**2(c)** Explain the heating effect of the given electric current.

**2(d)** Apply laws of series and parallel combination in the given electric circuits.

**2.4** Conductors, Insulators and Semiconductors, Energy bands, intrinsic and extrinsic semiconductors

**2(e)** Distinguish the given conductors, semiconductors and insulators on the basis of energy bands.

**2.5** P-N junction diode, I-V characteristics of p-n junction, applications of p-n junction diode.

**2(f)** Explain the I-V characteristics and applications of the given p-n junction diodes.

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**Chapter 3 : Heat and Optics 3-1 to 3-49**

**Syllabus :**

**3.1** Heat, temperature, temperature scales.

**3(a)** Convert the given temperature in different temperature scales.

**3.2** Modes of transfer of heat, good and bad conductors of heat, law of thermal conductivity.

**3(b)** Describe the properties of the given good and bad conductors of heat.

**3.3** Boyle's law, Charle's law, Gay Lussac's law, perfect gas equation.

**3(c)** Relate the characteristics of the three gas laws.

**3.4** Specific heat of gas at constant pressure and volume ($C_P$ and $C_v$),ratio of specific heats.

**3(d)** Determine the relation between specific heats for the given materials.

**3.5** Reflection, refraction, laws of refraction, total internal reflection.

**3(e)** Distinguish the phenomena of total internal reflection for the given mediums.

**3.6** Optical fiber: Principle, construction and path of light through optical fiber, applications of optical fibers.

**3(f)** Describe light propagation in the given type of optical fiber.

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