

APPLIED PHYSICS - II

NOTES - Attempt all questions.

Q1) Answer any ten parts.

[1x10 = 10]

- (i) Give the name of one conductor which does not obey Ohm's law?
- (ii) What are the charge carriers in p-type semiconductor?
- (iii) What is the speed of 'LASER' rays?
- (iv) Write down the condition for path difference in destructive interference?
- (v) Write down the principle of optical fibre?
- (vi) What do you mean by 'coherent' light source?
- (vii) Define population inversion?
- (viii) Define 1 ampere current in terms of electron?
- (ix) Difference b/w interference and Diffraction?
- (x) What is Coulomb's law?
- (xi) How much is barrier voltage at silicon PN junction?
 - (i) 0.3 V
 - (ii) 0.7 V OR
 - (iii) 1.1 V
- (xii) Show the symbol of "p-n-p" transistor?

Q2) Attempt any five parts. [2x5=10]

- (i) What is Metre Bridge explain with diagram?
- (ii) What is electric motor explain with diagram?
- (iii) Explain the kirchhoff's law?
- (iv) Derive the Gauss' Theorem?
- (v) Difference b/w Sound wave and light wave?
- (vi) What is principle of superposition?

Q3) Attempt any two parts. [2x5=10]

- (i) Explain working of He-Ne laser with energy level diagram. States two uses of laser?
- (ii) Obtain expression of charge in charging a capacitor at any instant. show that for complete charging time taken will be infinite?
- (iii) What do you mean by majority and minority charge carriers in a transistor?

Q4) Attempt any two parts. [2x5=10]

- (i) What is diffraction of light? Derive the fraunhofer Diffraction?
- (ii) States difference b/w interference and diffraction of light. A light of wavelength 6000 Å enters in water what will be the wavelength of light in water?
- (iii) What is S.H.M and Discuss types with example?

Q5) Attempt any two parts:

[2x5=10]

- (i) Define Numerical Aperture. Draw clear diagrams of light travels graded index and single mode fibres?
- (ii) What are Dia. Para and Ferro magnetic materials state their Properties?
- (iii) Explain working of p-n-p transistor, with biasing. What are α , and β parameters of a transistor obtain relation b/w them?