Roll No. ..... **Total Pages : 4**

2202/M

K-33/2051

APPLIED PHYSICS-II

Paper–DBAS-104

Semester–II

Time allowed : 3 Hours] [Maximum Marks : 50

Note : The candidates are required to attempt three questions each from section A and section B carrying 5 marks each and the entire section C consisting of 10 questions carrying 2 marks each.

SECTION-A

1. What is Lens Formula? Derive it for a convex lens. 5

2. Explain the effect of temperature variation on the resistivity of pure semiconductors. With the help of energy band diagram, distinguish between the conductors, insulators and semiconductors. 5

3. How a p-n junction is forward and reversed biased? Explain the function of a p-n junction diode as a full wave rectifier. 5

4. Explain the term absorption, spontaneous and stimulated emission of radiation. Explain the principle of laser. 5

SECTION-B

5. Explain the concept of electric field. Derive a relation for the intensity of electric field at an equatorial point of an electric dipole. 5

6. State Kirchhoff's laws for electrical circuits. Derive the principle of Wheatstone bridge using - Kirchhoff's laws? 5

7. State Ampere's Circuital Law. Calculate using Ampere's Circuital Law, the magnetic field due to infinitely long wire carrying current I. 5

8. State Faraday's Laws of electromagnetic induction. Derive an expression for the force experienced by a current carrying conductor placed in a magnetic field. 5

SECTION-C

9. Attempt all question : $10 \times 2 = 20$

(i) Define critical angle for total internal reflection.

(ii) What is depletion region in a p-n junction?

(iii) What are intrinsic and extrinsic semiconductor?

(iv) What is half wave rectifier?

(v) What is population inversion?

(vi) State Coulomb's law of electrostatic force between two point charges.

(vii) How much work is done in moving a charge 500 C charge between two points on an equipotential surface?

(viii) Three capacitors each of capacitance 2 F are connected in parallel. Find the resultant capacitance in farad.

(ix) State Biot Savort's Law.

(x) How can galvanometer be converted into voltmeter?