



Total No. of Questions: 3 / 18

Total No. of Pages: 2

**FIRST YEAR (B.Sc. (Blended))**  
**24BLPH12101: Modern Physics**  
**(Semester II)**

**Program: B.Sc. Blended**  
**Program Specific: B.Sc. Blended (Chemistry)**  
**Course Type: DSC**  
**Paper: I**

**Credits: 2**  
**Time: 2 Hours**  
**Max. Marks: 30**  
**SET: A**

**Instructions to the candidate:**

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw a well labelled diagram wherever necessary.
- 4) Use of scientific calculators and log table is allowed.

**Q1) Attempt ANY FIVE of the following:**

**[5 X 2 = 10]**

- a) State Gauss's law for magnetism.
- b) State lens formula.
- c) State ohm's law.
- d) State Kirchoff's current law.
- e) Draw the sketch of different types of convex lenses.
- f) Explain the interference of light.
- g) What are Galilean transformations?

**Q2) Attempt ANY FOUR of the following:**

**[4 X 3 = 12]**

- a) Two sphere of charges +20 and +30 coulomb are placed 18 cm apart. Find the position of the point between them where the intensity is zero.
- b) Write a short note on Magnetization of earth.
- c) Electric field at a point due to point charge 25cm away is 10 N/C. What is the magnitude of charge.
- d) Distinguish between conductors and insulators.
- e) An aluminum wire of diameter 0.4 cm carries a current of 25 A. Find the magnetic field at the surface of wire.

f) Explain the concept of electric flux.

**Q3) Attempt ANY TWO of the following:**

**[2 X 4 = 08]**

- a) What is the origin of magnetism? Explain three types of magnetic materials.
- b) Calculate the focal length of double convex lens for which the radius of curvature of each surface is 50 cm and refractive index of material of lens is 1.5.
- c) Draw diagram for Michelson Morley experiment. Explain the physical significance of negative results.
- d) Derive the relation for length contraction.

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