

This question paper contains 4 printed pages.]

Your Roll No. ....

**1235**

**B.Sc. (Hons.)/III**

**A**

**PHYSICS – Paper XXIII & XXIV**

**(Physics Lab. – III & IV)**

**Time : 1 Hour**

**Maximum Marks : 20**

*(Write your Roll No. on the top immediately on receipt of this question paper.)*

Attempt **10** questions from each section and **20** questions in all. **All** questions carry equal marks.

**SECTION – A**

1. What is the effect of introducing a core of magnetic material in a solenoid on the measurement of  $\vec{B}$  and  $d\vec{B}/dx$  ?
2. What is the utility of drawing the hysteresis loop ?
3. How does the magnetisation of a paramagnetic substance change with
  - (i) temperatures
  - (ii) intensity of magnetising field

4. Differentiate between plane polarised and circularly polarised light.
5. What is the Brewster angle for glass given that its refractive index in air = 1.5 ?
6. How does the specific rotation of cane sugar vary with temperature ?
7. State Stefan's Law for a black body.
8. In  $\frac{e}{m}$  by Magnetic focussing expt., what should be the maximum value of the focal length in terms of the length of the tube ?
9. Why don't Si and Ge emit light ?
10. Why is it useful to have pressure contacts for passing current and measuring voltage across a semiconductor in the four-probe method ?
11. On what factors does the sign of Hall's coefficient depend ?
12. What are the requisites of a sample used for the determination of Hall coefficient ?
13. Give expressions for Hall electric field ( $E_H$ ). How is it related to the electric field across the sample length ( $E$ ) ?
14. Explain what is meant by Rydberg constant.
15. What is the ratio of the short wavelength limits of Lyman and Balmer series ?