[This question paper contains 4 printed pages.]

5994 *Your Roll No.* .....

B.Sc. (H) ELECTRONICS / Ist Sem. B

Paper – ELHP-105

Electronics Practicals – I

(Admissions of 2010 and onwards)

Time : 1 Hr. *Maximum Marks : 25*

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

Attempt any **Five** *questions from* **Section 'A'.**
Each question is of **1 mark.**
Attempt any **Ten** *questions from* **Section 'B'.**
Each question is of **Two marks**

SECTION A

1. How does the time period change on reversing the positions of the hollow and solid cylinders in the Maxwell's needle experiment ? (1)

2. What is more elastic : water or air ? Why ? (1)

3. In a solenoid carrying current, where is dB/dx (i) maximum and (ii) minimum ? (1)

P.T.O.

4. What is Hall coefficient ? How is it related to carrier concentration ? (1)

5. 'For calculating the band gap of a semi conductor by Four Probe method, it is necessary to heat the sample to more than 100°C.' Justify or refute the above statement with appropriate reasoning. (1)

6. What happens if an LED is operated in a reverse bias mode ? (1)

7. Why do lines in the absorption spectrum of iodine come closer near the convergence limit ? (1)

SECTION B

1. How does the resistance of a semiconductor change with respect to temperature ? Is the behaviour same as in metals ? (2)

2. Define the four elastic constants of a material. (2)

3. What is the difference between emission spectra and absorption spectra ? (2)

4. Define Planck's constant. Why is photoelectric effect an instantaneous process ? (2)

5. How do you find Boltzmann's constant from I–V characteristics of a p-n junction diode in the forward bias mode? (2)

6. What is electroluminscence? Why do Si and Ge diodes not emit light? (2)

7. In the $\frac{e}{m}$ experiment using bar magnets what is the effect of magnetic field on the direction of electrons? Give SI units of e/m. (2)

8. What is a hysteresis loop? Define the terms (i) Coercivity and (ii) Retentivity. (2)

9. How does the magnetic susceptibility of para, dia and ferro magnetic materials vary with temperature? (2)

10. On what factors do the following depend in photoelectric effect.

    (i) the number of electrons emitted per unit area.

    (ii) the Kinetic energy of the emitted electrons. (2)

11. Give the value of Poisson's ratio in terms of Y and η. What is the theoretical limit between which the value of σ should lie? (2)

12. What is the underlying principle for measurement of susceptibility of a paramagnetic liquid by Quincke's method ? (2)

13. How is the iodine spectrum effect by an increase in temperature ? (2)