

SECTION B**6 × 4 = 24**

- Notes :**
- i) Answer any six of the following questions.
 - ii) Each question carries four marks.
 - iii) All are Short Answer Type Questions.

11. Explain the formation of a rainbow.
12. How do you determine the resolving power of your eye?
13. Derive an expression for the intensity of the electric field at a point on the equatorial plane of an electric dipole.
14. Derive an expression for the capacitance of a parallel plate capacitor.
15. State and explain Biot-Savart Law.
16. Obtain an expression for the magnetic energy stored in a solenoid in terms of magnetic field B , area A and length L of the solenoid.
17. What are the limitations of Bohr's theory of hydrogen atom?
18. Distinguish between half-wave and full-wave rectifiers.

SECTION C**2 × 8 = 16**

- Notes :**
- i) Answer any two of the following questions.
 - ii) Each question carries eight marks.
 - iii) All are Long Answer Type Questions.

19. Explain the formation of stationary waves in an air column enclosed in open pipe. Derive the equations for the frequencies of the harmonics produced.
An open organ pipe 30 cm long is sounded. If the velocity of sound is 330 m/s, what is the fundamental frequency of vibration of the air column?
20. State the working principle of potentiometer. Explain with the help of a circuit diagram, how the potentiometer is used to determine the internal resistance of the given primary cell.
In a potentiometer arrangement, a cell of emf 1.25 V gives a balance point at 35.0 cm length of the wire. If the cell is replaced by another cell and the balance point shifts to 63.0 cm, what is the emf of the second cell?
21. Explain the principle and working of a nuclear reactor with the help of a labelled diagram.