

# BOARD OF INTERMEDIATE EDUCATION (AP)

HALF YEARLY EXAMINATIONS - 2021

SENIOR INTER PHYSICS

MODEL PAPER - 2 (English Version)

Time: 3 Hours

Max.Marks: 60

## SECTION - A

Note: i) Very short answer type questions.

10 × 2 = 20

ii) Answer All questions.

iii) Each question carries 2 marks.

1. What is dispersion? Which colour gets relatively more deviated?
2. What is hypermetropia? How can it be corrected?
3. Two lenses of power  $-1.75$  D and  $+2.25$  D respectively are placed in contact. Calculate the focal length of the combination.
4. What is the force on a conductor of length  $L$  carrying a current  $i$  placed in a magnetic field of induction  $B$ ? When does it become maximum?
5. Distinguish between ammeter and voltmeter?
6. State Ampere's law.
7. Define magnetic inclination or angle of dip.
8. What is the magnetic moment associated with a solenoid?
9. The horizontal component of the earth's magnetic field at a certain place is  $2.6 \times 10^{-5}$  T and the angle of dip is  $60^\circ$ . What is the magnetic field of the earth at this location?
10. Two organ pipes of lengths 65 cm and 70 cm respectively are sounded simultaneously. How many beats per second will be produced between the fundamental frequencies of the two pipes? (velocity of sound = 330 m/s)

## SECTION - B

Note: i) Short answer type questions.

6 × 4 = 24

ii) Answer any Six questions.

iii) Each question carries 4 marks.

11. With a neat labelled diagram explain the formation of image in a simple microscope.
12. A light wave of frequency  $4 \times 10^{14}$  Hz and a wavelength of  $5 \times 10^{-7}$  m passes through a medium. Estimate the refractive index of the medium.
13. Derive the expression for the intensity at a point where interference of light occurs. Arrive at the conditions for maximum and zero intensity.

14. State and explain Coulomb's law in electricity.
15. Derive the equation for the couple acting on an electric dipole in a uniform electric field.
16. Three capacitors of capacitances 2 pF, 3pF and 4 pF are connected in parallel.
  - a) What is the total capacitance of the combination?
  - b) Determine the charge on each capacitor if the combination is connected to a 100 V supply.
17. Derive an expression for the magnetic induction at the centre of a current carrying circular coil using Biot – Savart law.
18. Derive expression for the equivalent capacitance in series combination.

**SECTION - C**

**Note: i) Long answer type questions.**

**2 × 8 = 16**

**ii) Answer any Two questions.**

**iii) Each question carries 8 marks.**

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.
20. State Kirchoff's laws for an electrical network. Using these laws deduce the condition for balance in a Wheatstone Bridge.
21. State the working principle of potentiometer. Explain with the help of circuit diagram how the potentiometer is used to determine the internal resistance of the given primary cell.

**Writer: K.S.S.Rajasekhar**

**Government Jr.College, Gollaprolu, East Godavari**