

BOARD OF INTERMEDIATE EDUCATION

SENIOR INTER PHYSICS

MODEL PAPER (ENGLISH VERSION)

TIME: 3 Hours

Max. Marks: 60

SECTION – A

I. i) All are very short answer type questions.

ii) Answer ALL the questions.

iii) Each question carries TWO marks.

10 × 2 = 20

1. What is dispersion? Which colour gets relatively more dispersed?
2. What happens to the force between two charges if the distance between them is
a) halved b) doubled?
3. Distinguish between ammeter and voltmeter.
4. What are the units of magnetic moment, magnetic induction of magnetic field?
5. State Lenz's Law.
6. Which type of transformer is used in 6 V bed lamp?
7. What are applications of micro waves?
8. What is De Broglie wavelength associated with an electron accelerated through a potential difference of 100 V?
9. Which gates are called universal gates?
10. Which type of communication is employed in mobile phones?

SECTION – B

II. i) Short answer type questions.

ii) Answer any SIX from the following.

iii) Each question carries FOUR marks.

6 × 4 = 24

11. Define critical angle. Explain total internal reflection using a neat diagram.
12. How do you determine the resolving power of your eye?
13. Derive an expression for intensity of electric field at a point on the axial plane of an electric dipole.
14. Three capacitors each of capacitance $9\ \mu\text{F}$ are connected in series.
a) What is the total capacitance of the combination?
b) What is the potential difference across each capacitor, if the combination is connected to a 120 V supply?
15. Derive an expression for the magnetic induction at the centre of a current carrying circular coil using Biot – Savart's Law.

16. Obtain an expression for the emf induced across a conductor which is moved in a uniform magnetic field which is perpendicular to the plane of motion.
17. What are limitations of Bohr's theory of hydrogen atom?
18. Define NAND and NOR gates. Give their truth tables.

SECTION – C

III. i) Long Answer type questions.

ii) Answer any TWO questions.

iii) Each question carries EIGHT marks.

2 × 8 = 16

19. a) How are stationary waves formed in closed pipes? Explain various modes of vibrations and obtain relations for their frequencies.
b) An open organ pipe 85 cm long is sounded. If the velocity of sound is 340 m/s. What is the fundamental frequency of vibration of air column?
20. a) State Kirchhoff's Law for an electric network. Using these laws deduce the condition for balance in a Wheatstone bridge.
b) A wire of resistance $4R$ is bent in the form of a circle. What is the effective resistance between the ends of diameter?
21. Explain the principle and working of a nuclear reactor with the help of a labelled diagram.