

219

II

Total No. of Questions – 21

Regd.

Total No. of Printed Pages – 02

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Part – III
PHYSICS, Paper-II
(English Version)

Time : 3 Hours]

[Max. Marks : 60

SECTION – A

10 × 2 = 20

- Note :** (i) Answer **all** questions.
(ii) Each question carries **two** marks.
(iii) All are very short answer type questions.

1. What is Hypermetropia ? How can it be corrected ?
2. How do you convert a moving coil galvanometer into a voltmeter ?
3. Magnetic lines form continuous closed loops. Why ?
4. Define Magnetisation of a sample. What is its SI unit ?
5. What is the phenomenon involved in the working of a transformer ?
6. Give two uses of Infrared Rays.
7. Write down de Broglie's relation and explain the terms therein.
8. The work function of cesium is 2.14 eV. Find the threshold frequency for cesium.
(Take $h = 6.6 \times 10^{-34}$ Js)
9. In which bias can a zener diode be used as voltage regulator ?
10. Define Modulation. Mention the basic methods of modulation.

SECTION – B

6 × 4 = 24

- Note :**
- (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 mirage.
12. Derive the expression for the intensity at a point where interference of light occurs. Arrive at the conditions for maximum and zero intensity.
13. Define intensity of electric field at a point. Derive an expression for the intensity due to a point charge.
14. Derive an expression for the capacitance of a parallel plate capacitor.
15. Derive an expression for the magnetic dipole moment of a revolving electron.
16. Describe the ways in which Eddy currents are used to advantage.
17. State the basic postulates of Bohr's theory of atomic spectra.
18. Describe how a semiconductor diode is used as a half-wave rectifier.

SECTION – C

2 × 8 = 16

- Note :**
- (i) Answer any **two** of the following questions.
 - (ii) Each question carries **eight** marks.
 - (iii) All are long answer type questions.

19. (a) What is Doppler effect ? Obtain an expression for the apparent frequency of sound heard when the source is in motion with respect to an observer at rest.
- (b) A rocket is moving at a speed of 200 ms^{-1} towards a stationary target. While moving, it emits a wave of frequency 1000 Hz. Calculate the frequency of the sound as detected by the target. (Velocity of sound in air is 330 ms^{-1})
20. (a) State the working principle of potentiometer. Explain with the help of circuit diagram how the emf of two primary cells are compared by using the potentiometer.
- (b) A potentiometer wire is 5 m long and a potential difference of 6 V is maintained between its ends. Find the emf of a cell which balances against a length of 180 cm of the potentiometer wire.
21. Explain the principle and working of a nuclear reactor with the help of a labelled diagram.