

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. Define 'Power' of a Convex Lens. What is its unit ?
2. Distinguish between Ammeter and Voltmeter.
3. Define Magnetic Inclination or angle of Dip.
4. Classify the following materials with regard to magnetism :  
Manganese, Cobalt, Nickel, Bismuth, Oxygen, Copper
5. What type of transformer is used in a 6 V bed lamp ?
6. What are the applications of microwaves ?
7. What are the Cathode Rays ?
8. What is "Photoelectric Effect" ?
9. What is a p-type semiconductor ? What are the majority and minority charge carriers in it ?
10. Define Modulation. Why is it necessary ?

219 (Day-10)

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## SECTION – B

 $6 \times 4 = 24$ 

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

11. Define focal length of a concave mirror. Prove that the radius of curvature of a concave mirror is double its focal length.
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 axial line of an electric dipole.
14. Three capacitors of capacitances 2 PF, 3 PF 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.
15. State and explain Biot-Savart Law.
16. Describe the ways in which Eddy Currents are used to advantage.
17. What are the limitations of Bohr's theory of hydrogen atom ?
18. Distinguish between Half-wave and Full-wave rectifiers.

## SECTION – C

 $2 \times 8 = 16$ 

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

19. Explain the formation of Stationary waves in an air column enclosed in open pipe. Derive the equations for the frequencies of the harmonics produced.  
 A closed organ pipe 70 cm long is sounded. If the velocity of sound is 331 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 circuit diagram how the emf of two primary cells are compared by using the potentiometer.  
 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.