219

Total No. of Questions – 21

Total No. of Printed Pages – 02

Regd. No.

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

Time : 3 Hours]

[Max. Marks : 60

SECTION – A

$10 \times 2 = 20$

Note :   (i)   Answer **all** questions.

(ii)   Each question carries **two** marks.

(iii)   All are very short answer type questions.

1.   A small angled prism of 4° deviates a ray through 2.48°. Find the refractive index of the prism.

2.   How do you convert a moving coil galvanometer into an ammeter ?

3.   Magnetic lines form continuous closed loop. Why ?

4.   Classify the following materials with regard to magnetism :

Bismuth, Cobalt, Oxygen, Copper

5.   A transformer converts 200 V ac into 2000 V ac. Calculate the number of turns in the secondary, if the primary has 10 turns.

6.   Give two uses of infrared rays.

7.   State Heisenberg's uncertainty principle.

8.   What is 'Work function' ?

9.   Draw the circuit symbols for p-n-p and n-p-n transistors.

10.   Mention the basic methods of modulation.

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. Explain the behaviour of dielectrics in an external field.

15. A 100 turn closely wound circular coil of radius 10 cm carries a current of 3.2 A.

     (a)   What is the field at the centre of the coil ?

     (b)   What is the magnetic moment of this coil ?

16. Describe the ways in which Eddy currents are used to advantage.

17. Explain the different types of spectral series.

18. Distinguish between half-wave and full-wave rectifiers.

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)   Explain the formation of stationary waves in stretched strings and hence deduce the laws of transverse waves in stretched strings.

     (b)   A steel wire 0.72 m long has a mass of 5.0×10^{-3} kg. If the wire is under a tension of 60 N, what is the speed of transverse waves on the wire ?

20. (a)   State Kirchhoff's law for an electrical 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 the diameter ?

21. Explain the principle and working of a nuclear reactor with the help of a labelled diagram.

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