219

II

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 × 2 = 20**

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

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

(iii) All are very short answer type questions.

1. Distinguish between Ammeter and Voltmeter.

2. Classify the following materials with regard to magnetism :

   Manganese, Bismuth, Oxygen, Copper

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

4. Define magnetic declination.

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. What are the applications of microwaves ?

7. What is Photoelectric effect ?

8. Write down deBroglie's relation and explain the terms therein.

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

10. Define modulation. Why is it necessary ?

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. With a neat labelled diagram, explain the formation of image in a simple microscope.

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. Derive an expression for the intensity of the electric field at a point on the axial line of an electric dipole.

14. Derive an expression for the capacitance of a parallel plate capacitor.

15. State and explain Biot-Savart Law.

16. What are Eddy currents ? Describe any three uses of it.

17. Describe Rutherford atom model. What are the drawbacks of this model ?

18. What is rectification ? Explain the working of a full-wave rectifier.

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 Kirchoff's law for an electrical network. Using these laws deduce the condition for balance in a wheatstone bridge.

    Three resistors 2Ω, 4Ω and 5Ω are combined in parallel. What is the total resistance of the combination ?

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