

0219**A**

Total No. of Questions—21

Total No. of Printed Pages—2

Regd. No.

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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. Classify the following materials with regard to magnetism :
Manganese, Cobalt, Nickel, Bismuth, Oxygen, Copper.
4. Define magnetic declination.
5. A transformer converts 200 V a.c. into 2000 V a.c. Calculate the number of turns in the secondary if the primary has 10 turns.
6. What is the principle of production of electromagnetic waves ?
7. What are "Cathode rays" ?
8. Write down de Broglie's relation and explain the terms therein.
9. Draw the circuit symbols for *p-n-p* and *n-p-n* transistors.
10. What are the basic blocks of a communication system ?

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. Why does the setting sun appear red ?

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P.T.O.

12. How do you determine the resolving power of your eye ?
13. State and explain Coulomb's inverse square law in electricity.
14. Derive an expression for the capacitance of a parallel plate capacitor.
15. A long solenoid of length 0.5 m has a radius of 1 cm and is made up of 500 turns. It carries a current of 5 A. What is the magnitude of the magnetic field inside the solenoid ?
16. Describe the ways in which Eddy currents are used to advantage.
17. Explain the different types of spectral series of Hydrogen atom.
18. Define NAND and NOR gates. Give their truth tables.

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. 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 pipe, 30 cm long, is open at both ends. Which harmonic mode of the pipe resonates a 1.1 kHz source ? Take the speed of sound in air as 330 ms^{-1} .

20. State Kirchhoff's laws for an electrical network. Using these laws deduce the condition for balance in a Wheatstone bridge.

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. Find the energy equivalent of one atomic mass unit in Joules.