0219

B

Total No. of Questions - 21

Total No. of Printed Pages - 2

Regd. No.

Part - III

PHYSICS, Paper - II

(English Version)

Time : 3 Hours

Max. Marks : 60

SECTION A

Notes : i) Answer **all** questions.

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

iii) All are **Very Short Answer Type Questions.**

1. What are cathode rays?
2. State Heisenberg's Uncertainty Principle.
3. Which gates are called Universal Gates?
4. Which type of communication is employed in mobile phones?
5. What is the magnetic moment associated with a solenoid?
6. A concave mirror produces an image of a long vertical pin placed 40 cm from the mirror at the position of the object. Find the focal length of the mirror.
7. Define magnetic declination.
8. Distinguish between ammeter and voltmeter.
9. A power transmission line feeds input power at 2300 V to a stepdown transformer with its primary windings having 4000 turns. What should be the number of turns in the secondary in order to get output power at 230 V?
10. What are the applications of microwaves?

SECTION B

Notes : 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 rainbow.

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 equatorial plane of an electric dipole.

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

15. State and explain Biot-Savart Law.

16. Obtain an expression for the magnetic energy stored in a solenoid in terms of magnetic field B, area A and length L of the solenoid.

17. What are the limitations of Bohr's theory of hydrogen atom?

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

SECTION C

2 × 8 = 16

Notes : 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.
An open organ pipe 30 cm long is sounded. If the velocity of sound is 330 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 a circuit diagram, how the potentiometer is used to determine the internal resistance of the given primary cell.
In a potentiometer arrangement, a cell of emf 1.25 V gives a balance point at 35.0 cm length of the wire. If the cell is replaced by another cell and the balance point shifts to 63.0 cm, what is the emf of the second cell?

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