0219
(TS)

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 **10 × 2 = 20**

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

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

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

1. What is the importance of Oersted's experiment?

2. 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.

3. What happens to compass needles at the Earth's poles?

4. Magnetic lines form continuous closed loops. Why?

5. What is meant by wattless component of the current?

6. Give two uses of infrared rays.

7. What is "work function"?

8. State Heisenberg's Uncertainty Principle.

9. What is *p*-type semiconductor? What are the majority and minority charge carriers in it?

10. Mention the basic methods of modulation.

SECTION B

$6 \times 4 = 24$

Notes : 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?

12. Discuss the intensity of transmitted light when a polaroid sheet is rotated between two crossed polaroids.

13. State and explain Coulomb's inverse square law in electricity.

14. Explain parallel combination of capacitors. Derive the formula for equivalent capacitance in parallel combination.

15. State and explain Biot-Savart Law.

16. A pair of adjacent coils has a mutual inductance of 1.5 H. If the current in one coil changes from 0 to 20 A in 0.5 sec, what is the change of flux linkage with the other coil?

17. Write a short note on DeBroglie's explanation of Bohr's second postulate of quantization.

18. Define NAND and NOR gates. Give their truth tables.

SECTION C

$2 \times 8 = 16$

Notes : i) Answer **any two** of the following questions.

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

iii) All are **Long Answer Type Questions.**

19. What is Doppler Effect? Obtain an expression for the apparent frequency of sound heard, when the source is in motion with respect to an observer at rest.

A train sounds its whistle as it approaches and crosses a level-crossing. An observer at the crossing measures a frequency of 219 Hz as the train approaches and a frequency of 184 Hz as it leaves. If the speed of sound is taken to be 340 m/s. Find the speed of the train.

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.

A battery of emf 2.5 V and internal resistance 'r' is connected in series with a resistor of 45 Ohm through an ammeter of resistance 1 Ohm. The ammeter reads a current of 50 mA. Calculate the internal resistance r.

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