

0219
(TS)

B

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

- Notes :
- Answer all questions.
 - Each question carries two marks.
 - All are Very Short Answer Type Questions.

- What is the importance of Oersted's experiment?
- 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.
- What happens to compass needles at the Earth's poles?
- Magnetic lines form continuous closed loops. Why?
- What is meant by wattless component of the current?
- Give two uses of infrared rays.
- What is "work function"?
- State Heisenberg's Uncertainty Principle.
- What is *p*-type semiconductor? What are the majority and minority charge carriers in it?
- Mention the basic methods of modulation.

SECTION B

6 × 4 = 24

- Notes :
- Answer **any six** of the following questions.
 - Each question carries **four** marks.
 - All are **Short Answer Type Questions**.

- Why does the setting sun appear red?
- Discuss the intensity of transmitted light when a polaroid sheet is rotated between two crossed polaroids.
- State and explain Coulomb's inverse square law in electricity.
- Explain parallel combination of capacitors. Derive the formula for equivalent capacitance in parallel combination.
- State and explain Biot-Savart Law.
- 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?
- Write a short note on DeBroglie's explanation of Bohr's second postulate of quantization.
- Define NAND and NOR gates. Give their truth tables.

SECTION C

2 × 8 = 16

- Notes :
- Answer **any two** of the following questions.
 - Each question carries **eight** marks.
 - All are **Long Answer Type Questions**.

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