# 219

**II**

## (New Syllabus)

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

Note : i) Answer **all** questions. **10 × 2 = 20**

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

iii) All are **very short answer** type questions.

**1.** What is dispersion? Which colour gets relatively more dispersed?

**2.** Define magnetic declination

**3.** A bar magnet of length 0.1 m and with a magnetic moment of 5 $Am^2$ is placed in a uniform magnetic field of intensity 0.4 T, with its axis making an angle of $60^0$ with the field. What is the torque on the magnet?

**4.** How do you convert a moving coil galvanometer into an ammeter?

**5.** What is the phenomenon involved in the working of a transformer?

**6.** Why are microwaves used in radars?

**7.** What is the photoelectric effect?

**8.** State Heisenberg's uncertainty principle.

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

**10.** Define modulation. Why is it necessary?

## SECTION B

Note : i) Answer **any six** of the following questions. **6 × 4 = 24**

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

iii) All are **short answer** type questions.

**11.** Why does the setting sun appear red?

**12.** Does the principle of conservation of energy hold for interference and diffraction phenomena? Explain briefly.

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

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

**15.** State and explain the Biot-Savart law.

**16.** Current in a circuit falls from 5.0 A to 0.0 A in 0.1 sec. If an average emf of 200 V is induced, give an estimate of the self-inductance of the circuit.

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

**18.** Describe how a semiconductor diode is used as a half-wave rectifier.

## SECTION C

Note : i) Answer **any two** of the following questions. **2 × 8 = 16**

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

iii) All are **long answer** type questions.

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

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

b) 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.