

219



Total No. of Questions - 21

Regd.

Total No. of Printed Pages - 2





# Part - III PHYSICS - Paper - II (English Version)

Time: 3 Hours

Max. Marks: 60

Note:- Read the following instructions carefully.

- (i) Answer all the questions of Section-A. Answer any six questions in Section-B and answer any two questions in Section-C.
- (ii) In Section-A, questions from Sr. Nos. 1 to 10 are Very Short Answer Type. Each question carries two marks. Answer all questions at one place in the same order.
- (iii) In Section-B, questions from Sr. Nos. 11 to 18 are of Short Answer Type. Each question carries four marks.
- (iv) In Section-C, questions from Sr. Nos. 19 to 21 are of Long Answer Type. Each question carries eight marks.

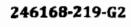
#### SECTION - A

 $10 \times 2 = 20$ 

## Note :- Answer ALL questions :

- 1. Define 'power' of a convex lens. What is its unit?
- What is the principle of a moving coil galvanometer?
- 3. Magnetic lines form continuous closed loops. Why?
- 4. Define magnetic declination.
- A transformer converts 200 V ac into 2000 V ac. Calculate the number of turns in the secondary if the primary has 10 terms.
- 6. What are the applications of microwaves?
- 7. Write down Einstein's photoelectric equation.
- 8. What important fact did Millikan's experiment establish?









9. What happens to the width of depletion layer in p-n junction diode when it is (i) forward biased and (ii) reverse biased?



10. What are the basic blocks of a communication system?

#### SECTION - B

 $6 \times 4 = 24$ 

### Note: - Answer ANY SIX questions:

- 11. Explain the formation of a mirage.
- 12. Does the principle of the conservation of energy hold for interference and diffraction phenomena? Explain briefly.
- 13. Derive the equation for the couple acting on an electric dipole in a uniform electric field.
- 14. Derive an expression for the electric potential due to a point charge.
- 15. Explain how crossed E and B fields serve as a velocity selector.
- 16. Describe the ways in which Eddy currents are used to advantage.
- 17. Explain the different types of spectral series of Hydrogen Atom.
- 18. Distinguish between half wave and full wave rectifiers.

#### **SECTION - C**

2×8=16

## Note: Answer AN TWO questions:

- 19. (a) Explain the formation of stationary waves in an air column enclosed in open pipe. Derive the equations for the frequencies of the harmonics produced. https://www.apboardonline.com
  - (b) A closed organ pipe 70 cm long is sounded. If the velocity of sound is 331 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 circuit liagram how the potentiometer is used to determine the internal resistance of the given primary cell.
- 21. (a) Explain the principle and working of a nuclear reactor with the help of a labelled diagram.
  - (b) If one micro gram of <sup>235</sup><sub>92</sub>U is completely destroyed in an atom bomb. How much energy will be released?







