III

219

Total No. of Questions - 21
Total No. of Printed Pages - 2

Regd. No. | | | | | | | 0 | 8 | 7 | 4 |

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

10×2=20

Note :- Answer ALL questions :

1. Define 'power' of a convex lens. What is its unit?
2. What is the principle of a moving coil galvanometer?
3. Magnetic lines form continuous closed loops. Why?
4. Define magnetic declination.
5. A transformer converts 200 V ac into 2000 V ac. Calculate the number of turns in the secondary if the primary has 10 turns.
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 when it is (i) forward biased and (ii) reverse biased?

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

SECTION – B

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 ANY 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.

(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 diagram 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 $^{235}_{92}U$ is completely destroyed in an atom bomb. How much energy will be released?