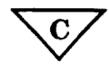
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Total No. of Questions - 33

Total No. of Printed Pages - 3

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Part - III PHYSICS, PAPER - II

(English Version)

Time: 3 Hours Max. Marks: 60

SECTION - A $10 \times 2 = 20$

Note:

- (i) Answer ANY TEN questions.
- (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 'Power' of a convex lens. What is its unit?
- 3. How do you convert a moving coil galvanometer into an ammeter?
- 4. Magnetic lines form continuous closed loops. Why?
- 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. Microwaves are used in Radars, why?
 - Write down deBroglie's relation and explain the terms therein.
 - 8. What is an n-type semiconductor? What are the majority and minority charge carriers in it?
 - 9. Define modulation. Why is it necessary?
 - 10. What are the basic blocks of a communication system?
 - 11. What is myopia? How can it be corrected?
 - 12. Distinguish between ammeter and voltmeter.
 - 13. Define magnetic declination.

- 14. Give two uses of infrared rays.
- 15. What is "work function"?

SECTION - B

 $6 \times 4 = 24$

Note:

- (i) Answer ANY SIX questions.
- (ii) Each question carries FOUR marks.
- (iii) All are of short answer type questions.
- Define critical angle. Explain total internal reflection using a neat diagram.
- 17. Explain the formation of mirage.
- 18. Explain Doppler effect in light. Distinguish between red shift and blue shift.
- 19. State and explain Coulomb's inverse square law in electricity.
- 20. Derive the equation for the couple acting on a electric dipole in a uniform electric field.
- 21. Define intensity of electric field at a point. Derive an expression for the intensity due to a point charge.
- 22. Derive an expression for the electric potential due to a point charge.
- 23. Derive an expression for the capacitance of a parallel plate capacitor.
- 24. Derive the formula for equivalent capacitance in series combination.
- 25. State and explain Biot-Savart law.
- 26. Describe the ways in which Eddy currents are used to advantage.
 - 27. Explain the different types of spectral series.
 - 28. What are the limitations of Bohr's theory of hydrogen atom?
 - 29. Describe how a semi conductor diode is used as a half wave rectifier

Note:

- (i) Answer any ANY TWO questions.
- (ii) Each question carries EIGHT marks.
- (iii) All are long answer type questions.
- 30. Explain the formation of stationary waves in an air column enclosed in open pipe. Derive the equations for the frequencies of the harmonics produced.
- State Kirchhoff's laws for an electrical network. Using these laws deduce the condition for balance in a Wheatstone bridge.
- 32. Explain the principle and working of a nuclear reactor with the help of a labeled diagram.
 - Calculate the energy equivalent of 1 g of substance.
- 33. How are stationary waves formed in closed pipes? Explain the various modes of vibrations and obtain relations for their frequencies.
 - 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?