FIRST REVISION TEST - 2025

Standard - XII
PHYSICS
Part - A

Time: 3.00 hrs   Marks:70

I Answer all the questions. Choose the correct answers.   15x1=15

1. For light incident from air on a slab of refractive index 2, the maximum possible angle of refraction is
   a) 30°   b) 45°   c) 60°   d) 90°

2. Which one of the following is the natural nanomaterial.
   a) Peacock feather   b) Peacock beak   c) Grain of Sand   d) Skin of the whale

3. The ratio of magnetic length and geometrical length is _____
   a) 3/4   b) 4/3   c) 5/6   d) 6/5

4. First diffraction minimum due to a single slit of width 1×10^{-5}cm is at 30°. The wavelength of light used is _____
   a) $400 \overset{\circ}{A}$ b) $500 \overset{\circ}{A}$ c) $600 \overset{\circ}{A}$ d) $700 \overset{\circ}{A}$

5. The barrier potential of a silicon diode is affroximately.
   a) 0.7V   b) 0.3V   c) 2.0V   d) 2.2V

6. An electricfield $\vec{E} = 10x\hat{i}$ exists in a certain region of space. Then the potential difference $V = V_0 - V_A$, where V_0 is the potential at the origin and V_A is the potential at x=2m is _____
   a) 10V   b) -20V   c) +20V   d) -10V

7. If the amplitude of the magnetic field is 3×10^{-6}T, then amplitude of the electric field for a electromagnetic waves is _____
   a) $100 Vm^{-1}$ b) $300 Vm^{-1}$ c) $600 Vm^{-1}$ d) $900 Vm^{-1}$

8. The average binding energy of iron nuclei is _____
   a) 8.8 eV   b) 8.8 MeV   c) 8.5 eV   d) 8.5 MeV

9. The internal resistance of a 2.1V cell which gives a current of 0.2A through a resistance of 10 Ω is _____
   a) 0.2Ω   b) 0.5Ω   c) 0.8Ω   d) 1.0Ω

10. In an oscillating LC circuit, the maximum charge on the capacitor is Q. The charge on the capacitor when the energy is stored equally between the electric and magnetic field is _____
    a) $\dfrac{Q}{2}$ b) $\dfrac{Q}{\sqrt{3}}$ c) $\dfrac{Q}{\sqrt{2}}$ d) Q

11. The critical angle of diamond is _____
    a) 37°   b) 31°   c) 49.8°   d) 24.4°

12. In an electron microscope, the electrons are accelerated by a voltage of 14KV. If the voltage is changed to 224KV, then the de Broglie wavelength associated with the electrons would.
    a) increase by 2 times   b) decrease by 2 times
    c) decrease by 4 times   d) increase by 4 times

13. A circular coil of radius 5cm and 50 turns carries a current of 3 ampere. The magnetic dipole moment of the coil is nearby
    a) $1.0 Am^2$ b) $1.2 Am^2$ c) $0.5 Am^2$ d) $0.8 Am^2$

14. The charge of cathode rays particle is _____
 a) positive   b) negative   c) neutral   d) not defined
15. The dielectric strength of air is _____
 a) 1×10^6 Vm^{-1} b) 6×10^6 Vm^{-1} c) 3×10^6 Vm^{-1} d) 9×10^6 Vm^{-1}

PART - B
II. Answer any six in short. Question No. 24 is compulsory.   6x2=12

16. What is corona discharge?
17. Compute the speed of the electromagnetic wave in a medium if the amplitude of electric and magnetic fields are 3×10^4 NC^{-1} and 2×10^{-4} T respectively.
18. Define electrical resistivity.
19. State Fleming's right hand rule.
20. What is myopia? What is its remedy?
21. List out the properties of neutrino?
22. What is Bremsstralung?
23. What do you mean by skip distance?
24. In Young's double slit experiment, the two slits are 0.15mm apart. The light source has a wavelength of 450nm. The screen is 2m away from the slits. Find the band width.

PART - C
III. Answer any six in breif. Question number 33 is compulsory.   6x3=18

25. Derive the relation between f and R for a spherical mirror.
26. Two materials X and Y are magnetised whose values of intensity of magnetisation are 500 Am^{-1} and 2000 Am^{-1} respectively. If the magnetising field is 1000 Am^{-1}, then which one among these materials can be easily magnetized.
27. List out the advantages and limitations of frequency modulation.
28. Write down the postulates of Bohr atom model.
29. Differentiate between Fresnel and Fraunhofer diffraction.
30. How will you induce an emf by changing the area enclosed by the coil.
31. How is a galvanometer converted into an ammeter.
32. Obtain the expression for energy stored in the parallel plate capacitor.
33. In a transistor connected in the common base configuration, $\alpha=0.95$, $I_E=1mA$. Calculate the values of I_c and I_B

PART - D
IV. Answer all the questions.   5x5=25

34. a) Calculate the electric field due to an electric dipole along its axial line.   **(OR)**
    b) Transistor functions as a switch, Explain.
35. a) Obtain the equation for bandwidth in Young's double slit experiment.   **(OR)**
    b) Deduce the relation for the magnetic field at a point due to an infinitely long straight conductor carrying current using Biot-Savart law.
36. a) Write down Maxwell equations in integral form.   **(OR)**
    b) Describe the microscopic model of current and obtain general form of Ohm's law.
37. a) Explain the construction and working of transformer.   **(OR)**
    b) Obtain the law of radioactivity.
38. a) Obtain lens maker's formula.   **(OR)**
    b) Describe briefly Davisson - Germer experiment which demonstrated the wave nature of electrons.

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