

FIRST REVISION EXAMINATION - 2025**CLASS : 12****PHYSICS**

Time : 3 Hours

Max. Marks: 70

PART - A**15 X 1 = 15**

Choose the correct answer and write it with option:

1. An electric dipole is placed at an alignment angle of 30° with an electric field of $2 \times 10^5 \text{ NC}^{-1}$. It experiences a torque equal to 8 N m. The charge on the dipole if the dipole length is 1 cm is
(a) 4 mC (b) 8 mC (c) 5 mC (d) 7 mC
2. What is the value of resistance of the resistor having color coding of Brown, Black and Yellow ?
(a) 100 k Ω (b) 10 k Ω (c) 1 k Ω (d) 1000 k Ω
3. The vertical component of Earth's magnetic field at a place is equal to the horizontal component. What is the value of angle of dip at this place?
(a) 30° (b) 45° (c) 60° (d) 90°
4. In a transformer, the number of turns in the primary and the secondary are 410 and 1230 respectively. If the current in primary is 6A, then that in the secondary coil is
(a) 2 A (b) 18 A (c) 12 A (d) 1 A
5. The electric and magnetic fields of an electromagnetic wave are
(a) in phase and perpendicular to each other (b) out of phase and not perpendicular to each other
(c) in phase and not perpendicular to each other (d) out of phase and perpendicular to each other
6. The speed of light in an isotropic medium depends on,
(a) its intensity (b) its wavelength
(c) the nature of propagation (d) the motion of the source with respect to medium
7. In a Young's double-slit experiment, the slit separation is doubled. To maintain the same fringe spacing on the screen, the screen-to-slit distance D must be changed to,
(a) 2D (b) $\frac{D}{2}$ (c) $\sqrt{2} D$ (d) $\frac{D}{\sqrt{2}}$
8. In an electron microscope, the electrons are accelerated by a voltage of 14 kV. If the voltage is changed to 224 kV, 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
9. The ratio of the wavelengths for the transition from $n = 2$ to $n = 1$ in Li^{++} , He^+ and H is
(a) 1:2:3 (b) 1:4:9 (c) 3:2:1 (d) 4:9:36
10. The zener diode is primarily used as
(a) Rectifier (b) Amplifier (c) Oscillator (d) Voltage regulator
11. The alloys used for muscle wires in Robots are
(a) Shape memory alloys (b) Gold copper alloys
(c) Gold silver alloys (d) Two dimensional alloys
12. A light emitting diode (LED) has a voltage drop of 2V across it and a current of 10 mA passes when it operates with 6V battery through a resistor R then the value of R is
(a) 4 k Ω (b) 40 k Ω (c) 400 k Ω (d) 200 k Ω
13. When an emf of 0.08V is induced in a metal rod of length 10 cm held normal to a uniform magnetic field of 0.4T, moves with a velocity of
(a) 3.2 m s^{-1} (b) 20 m s^{-1} (c) 2 m s^{-1} (d) 0.5 m s^{-1}
14. By a monochromatic wave, we mean
(a) A single ray (b) A single ray of a single colour
(c) Wave having a single wavelength (d) Many rays of a single colour
15. Assertion: (A)
Electric energy consumption is measured in commercial units.
Reason : (R) Kilo volt – ampere and kilo watt hour have the same dimensions.
(a) Both (A) and (R) are true and the reason is the correct explanation of the assertion.
(b) Both (A) and (R) are true but the reason is not the correct explanation of the assertion
(c) (A) is true statement but (R) is false. (d) Both (A) and (R) are false statements.

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PART - B**6 X 2 = 12****Answer any SIX questions and Question No.19 is compulsory.**

16. Define displacement current.
17. Why is it safer to be inside a car than standing under a tree during lightning?
18. Distinguish between ohmic and non-ohmic materials?
19. Compute the magnitude of the magnetic field of a long straight wire carrying a current of 1 A at distance of 1 m from it.
20. State Lens law.
21. What is optical path?
22. Find the polarizing angle for glass of refractive index 1.5?
23. Give the Barkhausen conditions for sustained oscillations.
24. Write any four properties of the cathode ray.

PART - C**6 x 3 = 18****Answer any SIX questions and Question No.29 is compulsory.**

25. Write uses of the polaroids.
26. State the postulates of Bohr atom model.
27. What is the necessity of modulation?
28. Obtain the macroscopic form of ohm's law from its microscopic form.
29. What is the focal length of the combination if the lenses of focal lengths -70 cm and 150 cm are in contact? What is the power of the combination?
30. Mention the various energy losses in a transformer. How it is minimized?
31. Calculate the torque acting on a bar magnet in uniform magnetic field.
32. Derive an expression for the energy stored in capacitor.
33. Write a note on continuous X-ray spectrum.

PART - D**5 x 5 = 25****Answer all Questions:**

34. A) Derive an expression for electrostatic potential due to electric dipole.
(OR)
B) Draw the circuit diagram of a full wave rectifier and explain its working.
35. A) Explain the determination of the internal resistance of a cell using voltmeter.
(OR)
B) Describe the Fizeau's method to determine speed of light.
36. A) What do you mean by electron emission? Explain briefly various methods of electron emission.
(OR)
B) Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.
37. A) (i) Write down any six properties of electromagnetic waves.
(ii) The relative permeability of the medium is 2.5 and the relative electrical permittivity of the medium is 2.25. Compute the refractive index of the medium.
(OR)
B) Discuss about astronomical microscope and obtain the equation for magnification.
38. A) Obtain the law of radioactivity.
(OR)
B) Obtain a force between two long parallel current carrying conductors and hence define ampere.

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