ST. JOSEPH STUDY CENTRE

12th STD: Revision Test - 2   **PHYSICS**   **Time: 2 Hrs / Total Marks: 50**

I. Choose The Correct Answer: [8 x 1 = 8]

1. When the current changes from +2 A to -2 A in 0.05 s, an emf of 8V is induced in a coil. The coefficient of self-induction of the coil is

    (a) 0.2H   (b) 0.4 H   (c) 0.8 H   (d) 0.1 H

2. A long solenoid has 1000 turns. When a current of 4 A flows through it the magnetic flux linked with each turn of the solenoid is 4×10^{-3} Wb. The Self-inductance of solenoid is

    (a) 3 H   (b) 2 H   (c) 1 H   (d) 4 H

3. A step down transformer reduces the supply voltage from 220V to 11V and increases the current from 6A to 100A. Then its efficiency is

    (a) 1.2   (b) 0.83   (c) 0.12   (d) 0.9

4. Two radiations with photon energies 0.9eV and 3.3 eV respectively are falling on a metallic surface successively. If work function of the metal is 0.6 eV then the ratio of maximum speeds of emitted electrons will be

    (a) 1:4   (b) 1:3   (c) 1:1   (d) 1:9

5. Emission of electron by the absorption of heat energy is called

    (a) Thermionic Emission   (b) Field Emission

    (c) Secondary Emission   (d) Photoelectric

6. If the nuclear radius of ^{27}Al is 3.6 fermi, the approximate nuclear radius of ^{64}Cu is

    (a) 2.4 F   (b) 1.2 F   (c) 4.8 F   (d) 3.6 F

7. A nucleus of $_4$Be^9 absorbs an alpha particle and emits a neutron. The resulting nucleus is

    (a) Carbon   (b) Beryllium   (c) Nitrogen   (d) alpha particle

8. The charge of cathode rays is

    (a) Carbon   (b) Beryllium   (c) Nitrogen   (d) alpha particle

II. Answer any 5 of the following questions: [5 x 2 = 10]

9. What is meant by Electromagnetic induction?

10. Mention the ways of producing induced emf.

11. What is a photo cell? Mention the different types of photocells.

12. Define work function of a photo electric material.

13. Define atomic mass unit u.

14. Compute the Binding Energy of $_2\text{He}^4$ nucleus using the following data: mass of Helium atom, M_A (He) = 4.00260u and that of hydrogen atom, m_H = 1.00785u.

15. Write any three properties of cathode rays.

III. Answer any 4 of the following questions: **[4 x 3 = 12]**

16. Using Faraday's law of electromagnetic induction, derive an equation for motional emf.

17. Give advantage and disadvantage of AC over DC.

18. Explain why photoelectric effect cannot be explained on the basis of wave nature of light.

19. Give the laws of photo electric effect.

20. Discuss the spectral series of hydrogen atom. (Diagram not necessary)

21. Define Half life and Mean life.

IV. Answer any 4 of the following questions: **[4 x 5 = 20]**

22. Explain the construction and working of a transformer.

[OR]

Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.

23. Show mathematically the rotation of a coil in a magnetic field over one rotation induces an alternating emf of one cycle

[OR]

Prove that energy is conserved during electromagnetic induction.

24. Give the construction and working of photo emissive cell.

[OR]

Briefly explain the principle and working of electron microscope

25. Explain the J.J. Thomson experiment to determine the specific charge of electron.

[OR]

Obtain the law of Radioactivity.

--ALL THE BEST--