


SECOND REVISION TEST - 2024	12 - STD	
PHYSICS YouTube/ Akwa Academy	Marks 70	Time 3.00 Hrs.

I. Answer all the questions**15 x 1 = 15**

- Which of the following is false for electromagnetic waves.
a. transverse b. longitudinal c. non-mechanical d. produced by accelerated charge
- If the current rating used in electric circuit is greater than 15A, then fuse wire is made of
a) Lead b) Tin c) Copper d) Both Lead and Tin
- A non-conducting charged ring carrying a charge of q mass m and radius r is rotated about its axis with constant angular speed Ω . Find the ratio of the magnetic moment with angular momentum is a. q/m b. $2q/m$ c. $q/2m$ d. $q/4m$
- A wire of resistance 1 ohm per meter is bent to form a circle of radius 1m. The equivalent resistance between its two diametrically opposite points, A and B as shown in figure is
a. $\pi \Omega$ b) $\pi / 2 \Omega$ c) $2\pi \Omega$ d) $\pi/4m$

- Two points A and B are maintained at a potential of 7V and -4V respectively. The work done in moving 50 electrons from A to B is
a. $8.80 \times 10^{-17}J$ b. $-8.80 \times 10^{-17}J$ c. $4.40 \times 10^{-17}J$ d. $5.80 \times 10^{-17}J$
- "Ski wax " is an application of nano product in the field of,
a. Medicine b. Textile c. Sports d. Automotive industry
- The principle based on which a Solar cell operates,
a. Diffusion b. Recombination c. Photovoltaic action d. Carrier flow
- In a hydrogen atom, the electron revolving in the second orbit, has angular momentum equal to
a. h b. h / π c. $4h / \pi$ d. $2h / \pi$
- If the nuclear radius of ^{27}Al is 3.6 Fermi, the approximate nuclear radius of ^{64}Cu in Fermi is
a. 2.4 b) 1.2 c) 4.8 d) 3.6
- Light transmitted by Nicol prism is,
a. partially polarised b. unpolarised
c. plane polarised d. elliptically polarised
- 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.
- Two polaroids are kept with their transmission axes inclined at 30° , unpolarised light of intensity 'I' falls on the first polarised. Intensity of light emerging from the second polaroid,
a. $1/8 I$ b. $1/4 I$ c. $3/4 I$ d. $3/8 I$
- The value of forbidden energy gap for Germanium at room temperature is,
a. 0.3 eV b. 0.7 eV c. 0.9 eV d. 1.1 eV
- An example of diamagnetic material is, a. Nickel b. Iron c. Water d. Aluminium
- Unit of decay constant is (λ),
a. meter b. kilogram c. $second^{-1}$ d. second

II. Answer any six questions. Question No 24 is compulsory :**6 x 2 = 12**

16. Define : Electric field
17. State Lenz law.
18. What are Fraunhofer lines ?
19. Two materials X and Y are magnetised whose value 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 magnetised.
20. Mention the two features of X-ray spectra, not explained by classical electromagnetic theory.
21. Define : Impact parameter.
22. What do you mean by Skip distance.
23. Give any four examples for "Nano" in nature.
24. The angle of minimum deviation for an equilateral prism is 37° . Find the refractive index of the material of the prism.

III. Answer any six questions. Question No 33 is compulsory:**6 x 3 = 18**

25. State the differences between Coulomb force and Gravitational force.
26. Explain the equivalent resistance of a Series resistor network.
27. Mention the characteristics of Lorentz force.
28. The current flowing in the first coil changes from 2 A to 10 A in 0.4 s. Find the mutual inductance between two coils if an emf of 60 mV is induced in the second coil.
29. Derive the relation between f and R for a spherical mirrors.
30. Obtain the expression for capacitance for a parallel plate capacitor.
31. Give the construction and working of photo emissive cell.
32. List out the advantages and limitations of frequency modulation.
33. Assuming that energy released by the fission of a single ^{235}U nucleus is 200 MeV, Calculate the number of fission per second required to produce 1 Watt power.

IV. Answer all the questions :**5 x 5 = 25**

34. a) Derive an expression for electrostatic potential due to an electric dipole.
(OR)
- b) What is dispersion ? Obtain the equation for dispersive power of a medium
35. a) Obtain the macroscopic form of Ohm's law from its microscopic form.
(OR)
- b) Obtain the condition for bridge balance in Wheatstone's bridge.
36. a) Deduce the relation for the magnetic field at a point due to an infinitely long straight conductor carrying current using Biot-Savart law.
(OR)
- b) Obtain Einstein's photo electric equation with necessary explanation.
37. a) Find out the phase relationship between voltage and current in a pure inductive circuit. **YouTube/ Akwa Academy (OR)**
- b) Derive an expression for Radius and Velocity of an electron in the n^{th} orbit using Bohr atom model .
38. a) Write down Maxwell equations in integral form **(OR)**
- b) Explain the construction and working of Full wave rectifiers.