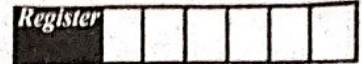


Class : 12

**FIRST REVISION EXAMINATION, JANUARY - 2025**

Time Allowed : 3.00 Hours]

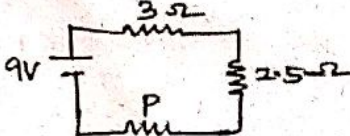
PHYSICS

[Max. Marks : 70

PART - I1. Answer all the questions. akwaacademy.blogspot.com

15x1=15

Choose the correct answer.

- In Nuclear Reactor the fuel used is uranium. Its natural abundance is
 (a) ${}_{92}^{235}\text{U}$ in 99.3% (b) ${}_{92}^{238}\text{U}$ in 99.7% (c) ${}_{92}^{235}\text{U}$ in 0.7% (d) ${}_{92}^{238}\text{U}$ in 0.7%
- Two points A and B are maintained at a potential of 7V and -4V respectively. The workdone in moving 50 electrons from A to B is
 (a) $8.80 \times 10^{-17} \text{ J}$ (b) $-8.80 \times 10^{-17} \text{ J}$ (c) $4.40 \times 10^{-17} \text{ J}$ (d) $5.80 \times 10^{-17} \text{ J}$
- The technology used for stopping the brain from processing pain is
 (a) Precision Medicine (b) Wireless brain sensor
 (c) Virtual reality (d) Radiology
- There is a current of 1.0 A in the circuit shown below what is the resistance of P.

 (a) 1.5 Ω (b) 2.5 Ω
 (c) 3.5 Ω (d) 4.5 Ω
- The ratio of wavelength of first line of Lyman series to the series limit of Balmer series is
 (a) 1:3 (b) 3:1 (c) 1:1 (d) 1:2
- Which of the following is NOT true for electromagnetic wave
 (a) it transports energy (b) it transports momentum
 (c) it transports angular momentum
 (d) In vacuum it travels with different speeds which depend on their frequency.
- Select fuse-wires used in the electric circuit for the current less than 15A and more than 15 A are
 (a) Copper, lead-tin (b) Copper-tin, lead (c) lead, copper (d) lead-tin, copper
- Three wires of equal lengths are bent in the form of loops. One of the loops in circle, another is semi circle, and third one is square. They are placed in a uniform magnetic field and same electric current is passed through them. Which of the following loop configuration will experience greater torque.
 (a) Circle (b) Semi-circle (c) Square (d) All of them
- The speed of extra ordinary ray having refractive index is 1.486 when a monochromatic sodium light passing through a Nicol prism is
 (a) $1.5 \times 10^8 \text{ m/s}$ (b) $3 \times 10^8 \text{ m/s}$ (c) $2.5 \times 10^8 \text{ m/s}$ (d) $2 \times 10^8 \text{ m/s}$
- In AC circuits, the projection of phasor gives
 (a) the average value of alternating voltage (or) current
 (b) the RMS value of alternating voltage (or) current
 (c) Instantaneous value of alternating voltage (or) current
 (d) algebraic sum of alternating voltage
- A light of wavelength 500 nm is incident on a sensitive metal plate of photo electric work function 1.235eV. The Kinetic energy of the photo electrons emitted is (Take $h=6.6 \times 10^{-34} \text{ JS}$)
 (a) 0.58 eV (b) 2.48 eV (c) 1.24 eV (d) 1.16 eV
- When a light is incident on a soap film of thickness $5 \times 10^{-2} \text{ cm}$. The wavelength of light reflected maximum in the visible region is 5320 Å. Refractive index of the film will be
 (a) 1.22 (b) 1.33 (c) 1.51 (d) 1.83

13. Which of the following is true for electromagnetic wave transmitted to reach receiver.
 (a) ionospheric propagation 3 MHz to 30 MHz (b) surface wave propagation 2 KHz to 20 MHz
 (c) Space wave propagation 3 MHz to 400 MHz (d) Sky wave propagation 20 KHz to 2 MHz.
14. When a light of wavelength 500 nm falls on aperture of width 0.5 mm the Fresnel distance will be
 (a) 25 mm (b) 25 cm (c) 0.25 cm (d) 25 m
15. The ratio of time period of revolution of proton and α - particle in an uniform magnetic field B is
 (a) 1:2 (b) 2:1 (c) 1:4 (d) 4:1

PART - II

II. Answer any six questions. Question Number 24 is Compulsory.

6x2=12

16. Distinguish between intrinsic and extrinsic semiconductors.
17. State the principle of Potentiometer.
18. The repulsive force between two magnetic poles in air is 9×10^{-3} N. If the two poles are equal in strength and are separated by a distance of 10cm, calculate the pole strength of the each pole.
19. How will define threshold frequency?
20. What are electromagnetic waves?
21. Light of wavelength of 5000 Å produces diffraction pattern of the single slit of width 2.5 μm. What is the maximum order of diffraction possible?
22. Define electric field and write its unit.
23. State Faraday's laws of the electromagnetic induction.
24. Calculate the number of nuclei of carbon-14 undercayed after 22, 920 years if the initial number of carbon-14 atoms is 10,000. The half life carbon-14 is 5730 years.

PART - III

III. Answer any six questions. Question Number 33 is Compulsory.

6x3=18

25. Mention the properties of equipotential surface.
26. Write short note an Thomson effect.
27. An electron moving perpendicular to a uniform magnetic field 0.500 T undergoes circular motion of radius 2.50 mm. What is the speed of electron.
28. Discuss about Nicol prism. akwaacademy.blogspot.com
29. List act the advantages and limitations of frequency modulation.
30. Give two uses each of i) IR radiation ii) Microwaves iii) UV radiation
31. An inductor of inductance L carries an electric current i. How much energy is stored while establishing the current in it?
32. UV light of wavelength 1800 Å is incident on a lithium surface whose threshold wavelength is 4965 Å. Determine the maximum energy of the electron emitted.
33. In Nuclear fission reaction what is the total energy released in 100th step in Kwh. Assume number of nuclei undergo present is 2.5×10^{40} .

PART - IV

IV. Note : Answer all the questions.

5x5=25

34. (a) Show mathematically that the rotation of the coil in a magnetic field over one rotation induces an alternating emf of one cycle. (OR)
 (b) Obtain Einstein's photoelectric equation with necessary explanation.
35. (a) Transistor functions as a switch. Explain. (OR)
 (b) Describe the microscopic model of current and obtain general form of Ohm's law.
36. (a) Write down Maxwell equations in integral form. (OR)
 (b) Derive the equation for refraction at single spherical surface.
37. (a) Explain in detail the construction and working of a Van de Graff generator. (OR)
 (b) Discuss about the simple microscope and obtain the equation for magnification for near point focussing and normal focussing?
38. (a) Explain the J.J. Thomson experiment t determind the specific charge of electron. (OR)
 (b) Obtain a relation for the magnetic field at a point along the axis of a circular coil carrying current using Biot-Savart law.