KRT

FIRST REVISION TEST - 2025

12 - Std

PHYSICS

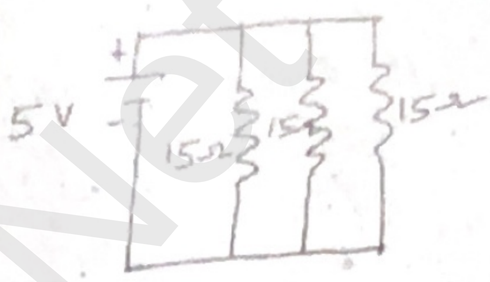
Time : 3.00 Hrs

Marks : 70

PART - A

I Choose the correct answer :- 15 X 1 = 15

1. Which charge configuration produces a uniform electricfield?
   a) point charge b) infinite uniform line charge
   c) uniformly charged infinite plane d) uniformly charged spherical shell
2. A parallel plate capacitor stores a charge Q at a voltage V. Suppose the area of the parallel plate capacitor and the distance between the plates are each doubled then which is the quantity that will change?
   a) Capacitance b) Charge c) Voltage c) Energy density
3. What is the current out of the battery



   a) 1A b) 2A
   c) 3A d) 4A
4. Two wires A and B with circular cross section are made up of the same material with equal lengths. Suppose R_A - $3R_B$ then what is the ratio of radius of wire A to that of B?
   a) 3 b) $\sqrt{3}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{1}{3}$
5. A circular coil of radius 5cm has 50 turns carries a current of 3A. The magnetic dipole moment of the coil is
   a) 1.0 Am^2 b) 1.2 Am^2 c) 0.5Am^2 d) 0.8Am^2
6. When the current charges from +2A to −2A in 0.05S, an emf of 8V is induced in a coil is
   a) 0.2H b) 0.4H c) 0.8H d) 0.1H
7. Which of the following electromagnetic radiations is used for viewing objects through fog?
   a) microwave b) infrared c) X - rays d) Gamma rays
8. Stars twinkle due to
   a) Reflection b) Total internal reflection c) Refraction d) Polarisation
9. A plane glass is placed over a various coloured letters (violet, green, yellow, red) The letter which appears to be raised more is ..... .
   a) Red b) Yellow c) Green d) Violet
10. Light of wavelength 5000A^o produces diffraction pattern of a single slit of width 2.5mm. What is the maximum order of diffraction possible?
    a) 6 b) 5 c) 8 d) 4
11. 1 eV = ...
    a) 1.6 X 10^{-19}J b) 1.6 X 10^{19}J c) 1.6 X 10^{-18}V d) 1.6 X 10^{18}JS
12. Emission of electrons by the absorption of heat energy is called ..... emission.
    a) Photoelectric b) Field c) Thermionic d) Secondary
13. If the nuclear radius of ^{27}Al is 3.6 fm, the approximate nuclear radius of ^{64}Cu in fermi is ..... .
    a) 2.4 b) 1.2 c) 4.8 d) 3.6

14. The principle based on which a solar cell operates is ..... .
    a) Diffusion b) Recombination c) Photovoltaic action d) Carrier flow
15. Which of the following is the natural nanomaterial
    a) Peacock feather b) Peacock beak c) Grain of sand d) Skin of the whale

PART - B

II Answer any six questions and question No. 19 is compulsory :- 6 X 2 = 12

16. Define capacitance a capacitor. Give it's unit.
17. Distinguish between drift velocity and mobility.
18. How will you increase current sensitivity.
19. Compute the B.E. per nucleon of $_2He^4$ nucleus. (Note : B.E. of $_2He^4$ is 28.33 MeV)
20. Mention the ways of producing induced emf.
21. What are black holes?
22. State Huygen's principle.
23. Why does sky appear blue?
24. What is corona discharge?

PART - C

III Answer any six questions and Question No. 29 is compulsory :- 6 X 3 = 18

25. Write the uses of capacitors?
26. Explain the equivalent resistance of parallel resistor network?
27. How is glavanometer converted into a voltmeter?
28. Write down the properties of electromagnets waves.
29. An object of 4cm height is placed at 6cm infront of a concave mirror of radius of curvature 24 cm. Find the position, height and magnification.
30. State and obtain Malu's law.
31. List out the laws of photoelectric effect.
32. Give the symbolic representation of alpha decay, beta decay and gamma emission.
33. Transistor functions as a switch. Explain.

PART - D

IV Answer all questions :- 5 X 5 = 25

34. a) Derive an expression for electrostatic potential due to an electric dipole. ***(OR)***
    b) Derive an expression for the force on a current - carrying conductor in a magnetic field.
35. a) Obtain the condition for bridge balance in Wheatstone's bridge. ***(OR)***
    b) Derive an expression for phase angle between applied voltage and current in a series RLC circuit.
36. a) What is spectrum? Explain the types of emission spectrum. ***(OR)***
    b) Obtain lens maker's formula.
37. a) Obtain the equations for magnification for near point and normal focusing of the simple microscope. ***(OR)***
    b) Briefly explain the principle and working of electron microscope.
38. a) Discuss the Millikan's oil drop experiment to determine the charge of an electron. ***(OR)*** b) Explain the construction and working of a full wave rectifier.