

HSEIIKROXII

45017-A

PHYSICS

(Long Answer Type Questions)

1. Explain the construction and working of Van-de-Graff generator.

Or

State Gauss's theorem and derive an expression for the electric field of an infinite long line of charge having uniform charge density λ .

2. Using Biot Savart's law derive an expression for magnetic field intensity produced at a point due to current flowing through an infinite long straight conductor.

Or

Describe the principle, construction and working of Moving Coil Galvanometer.

3. State Lenz's law of Electro-magnetic induction and show that it is in accordance with law of conservation of energy.

Or

Explain L-C Oscillation. Write the expression for the frequency of L-C Oscillation

4. Derive lens maker's formula for a convex lens.

Or

Explain the term wavefront. Describe Huygens Construction for propagation of wavefronts in a medium. <https://www.jkboseonline.com>

(Short Answer Type Questions)

5. Derive an expression for energy stored in a charged capacitor.

6. Establish a relation between drift velocity of electrons and I current

7. A wire of resistance one ohm is stretched to double its length

What is the new resistance of the wire ?

8. Define Mutual Inductance. Write its S.I. unit. Give two factors on which the Mutual Inductance of a pair of coils depends.

9. What is displacement current ? WHh this concept was introduced ?
10. What are Optical Fibres ? How light waves are propagated in them?
11. Obtain an expression for magnifying power of simple microscope.
12. Explain mass defect and binding energy.

(Very Short Answer Type Questions)

13. Express the force exerted by a magnetic field on a moving charged particle.
- 14 Give elementary idea of Raman effect
15. Show that the De-Broglie wavelength of an electron of energy E is given by the relation
$$\lambda = \frac{h}{\sqrt{2mE}}$$
16. Give conversion of 1 atomic mass unit into kg.
17. What is depletion region in a P-n junction ?
18. Draw the logical symbol and truth table of an AND gate.
19. What is Modulation ?
20. Sky wave propagation is not possible for waves having frequency greater than 30 MHz. Explain.

(Objective Type Questions)

21. Neutral temperature for a thermo-couple is constant..... (Yes/No)
22. The force acting on a charge moving through a uniform magnetic field is maximum when..... (Fill in the blanks)
23. The angle of minimum deviation produced by a Prism is different for different wavelengths (True/False)
24. The momentum of a photon having frequency 1.5×10^{13} Hz is:

(a) 3.3×10^{-29} kg m/sec (b) 3.3×10^{-34} kg m/sec
(c) 6.6×10^{-30} kg m/sec (d) 6.6×10^{-34} kg m/sec 1
(Tick the correct)

25. Photoelectric effect was discovered by..... (Fill in the blanks)
26. The Average Binding Energy of a nucleus is (Fill in the blanks)

27. Majority charge carriers in PNP Transfer is :

(a) holes (b) electrons (c) Both (a) and (b) (d) None of these

28. Some conducting material having fewer free electrons than pure Ge:

(a) n-type (b) s-type (c) Both (a) and (b) (d) None of these

29. The output of OR Gate is 1 :

(a) If either inputs is zero

(b) Only if both inputs are 1

(c) If both inputs are zero

(d) If either or both inputs are 1

30. Give one example of amplitude modulation.

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