

SWAMI VIVEKANANDA MATRIC HR SEC SCHOOL, ARUMBAVUR

STD: XII

MARKS: 70

SUB: PHYSICS

TIME: 3.00 HRS

MODEL TEST (2022) {UNIT 1,2,3,5 }

PART - ACHOOSE THE BEST ANSWER:

10 X 1 = 10

1. The unit of proportionality constant in electrostatics?

- a) $N m^2 kg^{-2}$ b) $N m^2 C^2$ c) $N m^{-2} kg^2$ d) $N m^2 C^{-2}$

2. Which charge configuration produces a uniform electric field?

- a) Uniformly charged infinite plane b) Uniformly charged infinite line.
c) Uniformly charged spherical shell d) Point charge

3. Fraunhofer lines are an example of ----- spectrum.

- a) Line emission spectrum b) Band emission spectrum
c) Line absorption spectrum d) band absorption spectrum

4. Which of the following is the unit of Gauss?

- a) Magnetic flux b) Electric flux c) Magnetic field d) Electric field

5. Which of the following electromagnetic waves?

- a) Alpha rays b) Beta rays c) Gamma rays d) X-rays

6. Current density is a ----- quantity?

- a) Vector b) Scalar c) Tensor d) Both a & b

7. The dimensional formula of magnetic flux is -----?

- a) $ML^{-2}T^{-2}A^{-1}$ b) $ML^2T^{-2}A^{-1}$ c) $MLT^{-2}A^{-1}$ d) $ML^2T^2A^2$

8. The value of electric flux is -----?

- a) Positive b) Zero c) Constant d) Both a & b

9. Which of the electromagnetic radiation is used for viewing objects through fog?

- a) Infrared rays b) Microwaves c) Gamma rays d) X-rays

10. If a magnet is cut into two equal halves along the length then pole strength is ----?

- a) Half times increases b) Half times decreases c) 4 times increases d) 4 times decreases

11. Current four times increases in the circuit and then the electric power is -----?

- a) 16 times increases b) 16 times decreases c) 4 times increases d) 4 times decreases

12. Which of the following magnetic susceptibility is negative?

- a) Aluminium b) Platinum c) Bismuth d) Iron

13. When the battery connected to capacitor and then inserted by a dielectric medium produced the potential difference is -----? a) High b) Low c) Zero d) Constant

14. The vertical component of Earth magnetic field at a place is equal to the horizontal component. What is the value of angle dip at this place---? a) 30° b) 45° c) 60° d) 90°

15. Internal resistance of a 2.1V cell which gives a current of 0.2 A through a resistance of 10 Ohm is -----? (a) 0.2 ohm (b) 0.5 ohm (c) 0.8 ohm (d) 1.0 ohm

PART - B

ANSWER ANY 6 QUESTIONS.Q.NO 24 IS COMPULSORY.

6 X 2 =12

16. Difference between coulomb force and gravitational force?

17. Define joule law?

18. Define coulomb inverse square law?

19. Why are electromagnetic waves non – mechanical?

20. Given solid metal sphere and hollow metal sphere. Which will hold more charge? Here both spheres are same radius?

21. Electromagnetic waves are non mechanical waves. Why?

22. The resistance of a nichrome wire at 20°C is 10Ω . If its temperature coefficient of resistivity of nichrome is $0.004/^\circ\text{C}$, find the resistance of the wire at boiling point of water .comment on the result.

23. Give the relation between electric field and electric potential.

24. 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?

PART - B

ANSWER ANY 6 QUESTIONS.Q.NO 30 IS COMPULSORY.

6 X 3 =18

25. Why is the path of charges particle not a circle when its velocity is not perpendicular to the magnetic field?

26. Write down the properties of electromagnetic waves.

27. State and explain kirchhoff's rules.

28. Explain about microwave oven?

29. Write a short note on superposition principle?

30. A battery has an emf of 12 V and connected to a resistor of 3Ω . The current in the circuit is 3.93 A Calculate (a) terminal voltage and the internal resistance of the battery (b) power delivered by the battery and power delivered to the resistor.

31. Write the principle of tangent galvanometer and explain?

32. Compute the intensity of magnetisation of the bar magnet whose mass, magnetic moment and density are 200g, 2 Am^2 and 8 g cm^{-3} respectively.

33. What are the difference between coulomb's law and Biot – Savart law.

ANSWER THE ALL QUESTIONS.

5 X 5 = 25

34. Explain the Equivalent resistance of a parallel resistor network. (OR)

Explain the types of emission spectrum.

35. Discuss the working of cyclotron in detail. (OR)

Derive an expression for electrostatic potential due to an electric dipole

36. Explain the determination of unknown resistance using meter bridge. (OR)

Derive the expression for the force between two parallel current carrying conductors.

37. Write down Maxwell equations in integral form. (OR)

How the emf of two cells are compared using potentiometer?

38. Explain in detail the construction and working of a Van de Graff generator. (OR)

Compare Dia, Para, and Ferro - magnetism

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