

SWAMI VIVEKANADA MATRIC HR SEC SCHOOL ARUMBAVUR.

STD : XII.

MARKS: 70

SUB: PHYSICS

TIME: 3.00HRS

MODEL QUARTERLY EXAM – (2022- 2023)

PART - ACHOOSE THE BEST ANSWER

15 x = 15

- Which charge configuration produces a uniform electric field?
 - point charge
 - uniformly charged infinite line
 - uniformly charged infinite plane
 - uniformly charged spherical shell
- If voltage applied on a capacitor is increased from V to $2V$, choose the correct conclusion.
 - Q remains the same, C is doubled
 - Q is doubled, C doubled
 - C remains same, Q doubled
 - Both Q and C remain same
- Region around a charge q which it exerts force on a test charge is called -----?
 - Electric flux density
 - Electric force
 - Electric field
 - Coulomb's force
- Temperature co – efficient of resistance for metals -----?
 - Constant
 - Positive
 - Zero
 - Negative
- A toaster operating at 240 V has a resistance of 120 Ω . Its power is
 - 400 W
 - 2 W
 - 480 W
 - 240 W
- In Joule's heating law, when R and t are constant, if the H is taken along the y axis and I^2 along the x axis, the graph is
 - straight line
 - parabola
 - circle
 - ellipse
- The relative magnetic permeability of the medium is 2.5 and the relative electrical permittivity of the medium is 2.25. Compute the refractive index of the medium.
 - 2.7
 - 2.4
 - 2.27
 - 2.1
- In a transformer, the number of turns in the primary and the secondary are 410 and 1230 respectively. If the current in primary is 6A, then that in the secondary coil is
 - 2 A
 - 18 A
 - 12 A
 - 1 A
- If a current I is flowing in a straight wire parallel to X – axis and magnetic field is in Y – axis then the wire experience----?
 - Z direction
 - X – direction
 - Y – direction
 - no force
- Which of the following electromagnetic radiations is used for viewing objects through fog -----?
 - microwave
 - gamma rays
 - X- rays
 - infrared
- Which of the following is false for electromagnetic waves
 - transverse
 - non-mechanical waves
 - longitudinal
 - produced by accelerating charges
- Gamma rays are used in the treatment of -----?
 - AIDS
 - Cancer
 - Polio
 - Tuberculosis
- Three wires of equal lengths are bent in the form of loops. One of the loops is circle, another is a semi-circle and the third one is a 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?
 - Circle
 - Semi-circle
 - Square
 - All of them
- A circular coil of radius 5 cm and 50 turns carries a current of 3 ampere. The magnetic dipole moment of the coil is nearly
 - 1.0 A m²
 - 1.2 A m²
 - 0.5 A m²
 - 0.8 A m²

15. Two identical conducting balls having positive charges q_1 and q_2 are separated by a centre to centre distance r . If they are made to touch each other and then separated to the same distance, the force between them will be

- (a) less than before (b) same as before (c) more than before (d) z

PART - B

ANSWER ANY SIX QUESTIONS.Q.NO 23 IS COMPULSORY

10 x 2 = 20

16. What are difference between coulomb force and gravitational force?
 17. What you meant by internal resistance of a cell?
 18. State Ampere's circuital law?
 19. Is an ammeter connected in series or parallel in a circuit ? Why?
 20. State Lens law?
 21. What are Fraunhofer lines? How are they useful in the identification of elements present in the sun?
 22. Write the similarities between Coulomb's law and biot – Savart law?
 23. An ideal transformer has 460 and 40000 turns in the primary and secondary coils respectively. Find the voltage developed per turn of the secondary coil if the transformer is connected to a 230 V AC main.
 24. In an electric circuit there is a capacitor of reactance 00 ohm connected across the source of 220 V. Find the displacement current?

PART - C

ANSWER ANY SIX QUESTIONS.Q.NO 32 IS COMPULSORY.

6X 3 = 18

25. Write down the properties of electromagnetic waves?
 26. List out the advantages of stationary armature rotating field system of AC generator.
 27. Explain the concept of velocity selector.
 28. Why is the path of a charged particle not a circle when its velocity is not perpendicular to the magnetic field?
 29. Explain about Kirchhoff's laws? 30. State Faraday's laws of electromagnetic induction?
 31. Define electric dipole. Give the expression for magnitude of its electrical dipole moment and the direction?
 32. Explain about thermoelectric effect?
 33. Circular coil of 20 turns has a radius of 8 cm and carries a current of 3 A. What is the magnitude of the magnetic field at a point on the axis of the coil at a distance from the centre equal to the radius of the circular coil?

PART - D

ANSWER ALL THE QUESTIONS.

5 X 5 = 25

34. Derive an expression of potential energy current a bar magnet in a uniform magnetic field?
 (OR) Write the uses of electromagnetic spectrum?
 35. Obtain the expression for the induced emf by changing relative orientation of the coil with the magnetic field?
 (OR)
 Explain the determination of the internal resistance of a cell using potentiometer.
 36. State gauss law in electrostatics. Obtain an expression for Electric field due to an infinitely long charged wire? (OR) Explain the types of emission spectrum?
 37. Prove that the total energy is conserved during LC oscillations. (OR) Derive the expression for the force on a current carrying conductor in a magnetic field.
 38. Explain in detail the construction and working of a Van de Graff generator? (OR)
 Obtain the condition for bridge balance in Wheatstone's bridge?

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PGT IN PHYSICS

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