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JEE Main 2026 Jan 23 Shift 1 Question Paper

Physics

1. A rod of mass m and length l falls from rest in a uniform horizontal magnetic field B . Find the expression for the induced emf in the rod after it has fallen through a distance x .
2. A magnetic field is applied, and a charged particle moves with a given initial velocity. Calculate the radius of the circular motion and time period of motion in the magnetic field.
3. From de Broglie's relation, calculate the wavelength of an electron accelerated through a given potential difference.
4. In a Young's double-slit setup, given slit separation and wavelength, find the fringe width on the screen placed at a specified distance.
5. A numerical based on current electricity: given resistances and battery voltage, calculate the potential difference across a specified resistor.
6. A rotational motion problem: given moment of inertia and angular velocity, find kinetic energy of rotation.
7. A wave optics question involving diffraction or interference and calculation of minima positions.
8. A problem on magnetism requiring calculation of magnetic field at a point due to current elements.

Chemistry

1. A question on order of ionisation energy for the elements: Cl, S, P, Al, Si. Options include different sequences to choose from.
2. Given two statements about $[\text{CoBr}_4]^{2-}$ and $[\text{CoCl}_4]^{2-}$, evaluate which statements are correct regarding energy absorption and crystal field splitting energy.
3. Given an electron configuration scenario: For an orbital with quantum numbers $n = 5, m = -1$ and another with $n = 3, l = 2, m = -1$, determine the maximum number of electrons possible.
4. An organic reaction sequence is provided; identify the final major product formed.
5. For a given equilibrium reaction, calculate the equilibrium constant or concentration after a change in conditions.
6. A physical chemistry graph question involving rate of reaction or concentration—interpret the graph to answer the question.
7. A question involving acid-base behaviour: for a weak acid of given concentration, calculate the pH of the solution.

Mathematics

1. For an arithmetic progression (A.P.) with given sums of first n terms, calculate another term or a relation between terms.
2. A 3D geometry question involving vectors: calculate the angle between two lines given direction ratios or vector components.
3. Given an equation involving absolute values, determine the total number of real solutions.
4. Solve a differential equation given by $x \, dy - y \, dx = x^2 + y^2 \, dx$ with an initial condition, and find a specified value of y .
5. A conic sections question: given the endpoints of a chord of a parabola that subtend a right angle at the vertex, find a specified expression involving the endpoint coordinates.

6. A calculus problem involving definite integrals or limits of a given function.
7. A matrix or determinant problem evaluating conditions for invertibility or a specific value of determinant.



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