SRI RAM KRISHAN DAV PUBLIC SCHOOL,SURIYA,GIRIDIH

DEEPAWALI HOMEWORK 2025-26

Class XII

PHYSICS

SECTION A EXPERIMENTS

1.To determine the resistivity of two/ three wires by plotting a graph for potential difference versus current.

2.To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.

SECTION -B

1. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.

2. To observe diffraction of light due to a thin slit

ACTIVITIES SECTION -A.

1.To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.

2. To assemble the components of a given electrical circuit.

SECTION-B

1.To determine the angle of minimum deviation for a given prism by plotting a graph between the angle of incidence and the angle of deviation.

2.To find the value of v for different values of u in case of a concave mirror and to find the focal length.

ENGLISH

On the basis of the given YouTube link

,https://youtu.be/5EUkESrhln0?si=JvlTAp74MJQHFp5F

prepare the Project Work for Internal Assessment from any one of the chapters of your choice from the books prescribed for you (Flamingo or Vistas) with proper care**.**

CHEMISTRY

PREPARE LAB MANUAL

BIOLOGY

Students are instructed to complete their assigned BIOLOGY experiment neatly in the practical notebook during the vacation and submit on the first day after the holidays**.**

COMPUTER SCIENCE

PREPARE LAB MANUAL

MATHS

Chapter – Relations and Functions

Activity: To verify that the inverse of a function exists only when it is one-one and onto.
Objective: To verify that a function must be one-one and onto to have an inverse.
Materials Required: Graph paper, pencil, ruler.
Procedure:

- Consider $f(x) = 2x + 3$ for $x \in R$.
- Show that f is one-one: If $f(x_1) = f(x_2) \Rightarrow x_1 = x_2$.
- Show that f is onto: For any $y \in R$, $\exists\ x = (y–3)/2 \in R$ such that $f(x)=y$.
- Hence, $f^{-1}(x)$ exists and equals $(x–3)/2$.

Observation: The function is both one-one and onto.
Result: The inverse of f exists and is $f^{-1}(x) = (x–3)/2$.
Conclusion: A function has an inverse if and only if it is bijective (one-one and onto).

Chapter – Inverse Trigonometric Functions

Activity: To verify the identity $\sin^{-1}x + \cos^{-1}x = \pi/2$.
Objective: To demonstrate that $\sin^{-1}x + \cos^{-1}x = \pi/2$ for $x \in [–1,1]$.
Materials Required: Scientific calculator, graph paper.
Procedure:

- Take different values of x in [–1, 1].
- Find $\sin^{-1}x$ and $\cos^{-1}x$ using a calculator.
- Add both values and note that their sum is $\pi/2$ (≈ 1.57 radians).

Observation: For all values of x, $\sin^{-1}x + \cos^{-1}x = \pi/2$.
Result: The given identity is verified successfully.
Conclusion: $\sin^{-1}x$ and $\cos^{-1}x$ are complementary functions.

Chapter – Matrices and Determinants

Activity: To verify that $|AB| = |A| \times |B|$ for two square matrices A and B.
Objective: To verify the determinant of the product equals the product of determinants.
Materials Required: Calculator, notebook.
Procedure:

- Let A = [[1,2],[3,4]] and B = [[2,0],[1,2]].
- Find $|A| = (1\times4 – 2\times3) = –2$.
- Find $|B| = (2\times2 – 0\times1) = 4$.
- Compute AB and then |AB|.
- Verify that $|AB| = |A| \times |B|$.

Observation: The equality $|AB| = |A| \times |B|$ holds true.
Result: The determinant property is verified.
Conclusion: For any two square matrices A and B, $|AB| = |A| \times |B|$.

Chapter – Continuity and Differentiability

Activity: To verify graphically that $f(x) = x^2$ is continuous and differentiable at $x = 1$.
Objective: To understand the concept of continuity and differentiability at a point.
Materials Required: Graph paper, pencil, ruler, calculator.
Procedure:

- Plot $y = x^2$ on graph paper.
- Observe that the curve is smooth and has no breaks near $x = 1$.
- Find left-hand and right-hand derivatives at $x = 1$.
- Both sides give the same value (2).

Observation: The function has no break or corner at $x = 1$.
Result: $f(x) = x^2$ is continuous and differentiable at $x = 1$.
Conclusion: A function is differentiable at a point if it is continuous and has equal left and right derivatives.

Chapter – Application of Derivatives

Activity: To find the slope of the tangent to the curve $y = x^2$ at $x = 2$.
Objective: To learn to apply derivative concepts to find slope of tangent.
Materials Required: Graph paper, ruler, calculator.
Procedure:

- Given $y = x^2$, $dy/dx = 2x$.
- At $x = 2$, slope $m = 2(2) = 4$.
- Draw tangent at $x = 2$ on graph and verify the slope visually.

Observation: The tangent line rises steeply with slope = 4.
Result: Slope of tangent at $x = 2$ is 4.
Conclusion: The derivative gives the slope of the tangent to a curve at a given point.

Chapter – Integration

Activity: To verify geometrically that the area under $y = x$ between $x = 0$ and $x = 2$ equals $\int_0^2 x\,dx$.
Objective: To understand integration as the area under a curve.
Materials Required: Graph paper, pencil, scale.
Procedure:

- Plot $y = x$ between $x = 0$ and $x = 2$.
- Shade the region under the curve and above the x-axis.
- Area geometrically = ½ × base × height = ½ × 2 × 2 = 2.
- Calculate $\int_0^2 x\,dx = [x^2/2]_0^2 = 2$.

Observation: Both methods give the same result.
Result: Verified that $\int_0^2 x\,dx$ equals the area under the curve.
Conclusion: Integration represents the area under a curve within given limits.