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MAYOR WORLD SCHOOL
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MAYO COLLEGE, 1875

# HOLIDAY HOMEWORK(2025-26)

## GRADE XII

## ENGLISH

**I.  Project Work :**
**Create a project  on the Topic :**
Language and Identity: The Power of Linguistic Resistance in History and Literature" with reference to the chapter - The Last Lesson.

This project will allow students to critically engage with the role of language in shaping personal and societal identity, making connections to historical struggles and literary depictions.

**Guidelines:**

> The students will explore the significance of language in shaping identity and resistance, considering historical and literary examples. The following aspects must be covered:
>
> 1. Importance of Language:
>    - How language preserves culture and identity.
>    - The role of language in resistance and empowerment.
> 2. Understanding Linguistic Chauvinism:
>    - Define linguistic chauvinism and examine its impact.
>    - Discuss modern examples of linguistic discrimination.
> 3. Historical Cases of Language Suppression:
>    - Instances where conquered people lost their language or had another imposed.
>    - The consequences of forced linguistic assimilation.
> 4. Challenges Faced by Linguistic Minorities:
>    - Social, economic, and cultural difficulties due to language suppression.
>    - Struggles in education and opportunities.
> 5. Strategies to Preserve Minority Languages:
>    - Role of education, literature, and cultural movements.
>    - Policies supporting linguistic diversity.
> 6. Linguistic Human Rights:
>    - The significance of language rights in maintaining freedom and heritage.
>    - International efforts to protect endangered languages.
> 7. Examples of Linguistic Chauvinism in English Literature:
>    - Analyse literary works that depict linguistic dominance and suppression.

**Project Submission Requirements:**
 1.Handwritten File
 - Minimum six  pages explaining the concepts with examples and analysis.
 - Include personal reflections on linguistic identity and preservation.

 2. Create a PowerPoint Presentation (10-12 slides) using  relevant images, historical references, and literary excerpts.
**Please email your presentation to mws.tanupriya@gmail.com by 10th July 2025.**

**II. What are Literary devices? Explain the following literary devices with examples:**
   1.Metaphor
   2.Simile
   3.Oxymoron
   4.Enjabment
   5.Transferred Epithet
   6.Imagery
   7.Synecdoche
   8.Alliteration
   9.Irony
   10. Repetition

# PHYSICS

**GENERAL INSTRUCTIONS:**
#Part A consists of revision worksheet, which is recapitulation of work which has been done so far.
#Part B are the investigatory project. There is list of some investigatory project. Students have to done one project out of those.

## Part - A

1. A small water droplet of mass 1g carries a charge of $8 \times 10^{-19}$ C. What electric field strength required to suspend droplet against gravity.
2. Two equal ball with positive charge 'q' C are suspended by two insulating string of equal length. What would be the effect on the force when a plastic sheet is inserted between two?
3. Calculate electric field due to electric dipole of length 10cm and consisting of $\pm100\mu c$ at a point 20cm from each charge.
4. (a) In parallel plate capacitor with air between the plates, each plate has area of $6\times10^{-3}$ m$^2$ and distance between the plates is 3mm. Calculate the capacitance of capacitor, if capacitor is connected to a 100V supply what is the charge on each plate of capacitor?
(C= 18 pF approx. and q= $1.8\times10^{-9}$C)
(b) What will happen if a 3mm thick mica sheet were inserted between the plates?
 (1) While voltage supply remain connected.
 (2) After supply was disconnected.
6. An electric dipole when held at 300 with respect to uniform electric field of $10^4$ NC$^{-1}$ experiences torque of $9 \times 10^{26}$ Nm. Calculate dipole moment of a dipole.
7. Four point charges each having a charge q are placed on the four corners A, B, C and D of regular pentagon ABCDE. The distance of each corner from the centre is a. Find the electric field at the centre of a pentagon.
8. Someone suggested using a 5000$\mu$F capacitor to generate flash for a camera. A capacitor is to be charged slowly and completely up to potential difference of 10V. At the time of generating flash, all stored energy of capacitor is discharged through a discharge tube in such manner that flash only takes time 100 $\mu$s to release the total energy of capacitor. Calculate the power of camera flash.
9.A storage battery of emf 8.0 V and internal resistance 0.5 $\Omega$ is being charged by a 120 V dc supply using a series resistor of 15.5 $\Omega$. What is the terminal voltage of the battery during charging? What is the purpose of having a series resistor in the charging circuit?
10.A battery of emf 10 V and internal resistance 3 $\Omega$ is connected to a resistor. If the current in the circuit is 0.5 A, what is the resistance of the resistor? What is the terminal voltage of the battery when the circuit is closed?
11.Two tiny spheres carrying charges 1.5 $\mu$C and 2.5 $\mu$C are located 30 cm apart. Find the potential and electric field:
(a) at the mid-point of the line joining the two charges, and
(b) at a point 10 cm from this midpoint in a plane normal to the line and passing through the mid-point.
12.Three capacitors each of capacitance 9 pF are connected in series.
(a) What is the total capacitance of the combination?
(b) What is the potential difference across each capacitors if the combination is connected to a 120 V supply?
13.If one of the two electrons of a H$_2$ molecule is removed, we get a hydrogen molecular ion H$^+_2$. In the ground state of an H$^+_2$, the two protons are separated by roughly 1.5 A, and the electron is roughly 1 A from each proton. Determine the potential energy of the system. Specify your choice of the zero of potential energy.
14.Two charges –q and +q are located at point A(0, 0, –a) and B(0, 0, +a) respectively. How much work is done in moving a test charge from point P(7,0,0) to Q (–3,0, 0)?
15.Two charges $5 \times 10^{-8}$ C and $-3 \times 10^{-8}$ C are located 16 cm apart. At what point(s) on the line joining the two charges is the electric potential zero? Take the potential at infinity to be zero.

# PART - B
## INVESTIGATORY PROJECT

**General instructions for Project file**

- **Use loose sheets, one side plain and the other side ruled.**
- **Paste the related pictures or draw the diagrams wherever necessary.**
- **Give proper heading with relevant points.**
- **Use a hard cover file with tags and cover it properly.**
- **DO NOT use a plastic report/stick file.**
- **Make "Investigatory Project Report" with following heading on it.**
  - ➢ First page- Topic, submitted to/submitted by
  - ➢ Acknowledgment
  - ➢ Contents
  - ➢ Introduction
  - ➢ Theory/ Report based data
  - ➢ Observation
  - ➢ Conclusion
  - ➢ Bibliography.

1. To study various factors on which the internal resistance/EMF of a cell depends.

2. To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of an incandescent lamp (of fixed power) used to 'illuminate' the LDR.

3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.

4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.

5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.

6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.

7. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/ (bulb) in a circuit fed up by an A.C. source of adjustable frequency.

8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

# CHEMISTRY

**GENERAL INSTRUCTIONS:**

**#Part A consists of revision worksheet, which is recapitulation of work which has been done so far.**
**#Part B are the investigatory project. There is list of some investigatory project. Students have to done one project out of those.**

## PART – A
### SOLUTION

Q-1: Which of the following statements is correct for the Van't Hoff factor?
 (a) In the case of dissociation, it is less than one    (b) In the case of association, it is more than one
 (c) It is never greater than one                          (d) In the case of association, it is less than one
 Q-2: Which pair will not show positive deviation from Raoult's law?
 (a) Methanol and chloroform                          (b) Methanol and cyclopentane
 (c) Ethanol and cyclohexane                          (d) Toluene and benzene
Q-3: Define Raoult's law for a binary solution containing a non -volatile solute.
Q-4: Determine the boiling point of a solution made by combining 15.00 g of NaCl with 250 g of water. (Kb = 0.512 K kg /mol and NaCl molar mass = 58.44 g/ mol)
Q-5: Manali is where Neha's grandmother lives. There is a lot of snow in front of the house in the winter. She requested that Neha clear the snow. To clear the snow, Sneha added NaCl.
a) Why does Sneha do so ?
 b) What is the value in Sneha's thinking ?
c) Define molal freezing point depression constant, Kf .

### ELECTROCHEMISTRY

 Q-6: Why is a salt bridge required in a galvanic cell?
 Q-7: Why does a solution's conductivity decrease with dilution?
Q-8: Predict the product of electrolysis of an aqueous $CuCl_2$ solution with an inert electrode.
Q-9: For the strong electrolytes NaOH, NaCl and BaCl2, the molar ionic conductivities at infinite dilution are $248.1 \times 10-4$ ,$126.5 \times 10-4$ , and $280 \times 10-4$mho cm2mol-1 respectively. Calculate the molar conductivity of Ba(OH)2 at infinite dilution.
Q-10. What are fuel cells? Why they are very demanding these days?

### AMINES

Q-11. Account for the following.
 (a) Ethylamine is soluble in water, whereas aniline is not.
(b) Aniline does not undergo Friedel-Crafts reaction.
Q12. Write short notes on the following.
(i)Carbylamine reaction (ii) Diazotisation (iii) Hofmann's bromamide reaction (iv) Coupling reaction.
Q-13 Write the necessary tests to distinguish between different types of amines.
**Q-14 An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B', which on heating with $Br_2$ and KOH forms a compound 'C' of molecular formula $C_6H_7N$. Write the structures and IUPAC names of compounds A, B and C.**

## PART - B
### INVESTIGATORY PROJECT/ REPORT

**Scientific investigations involving laboratory testing and collecting information from other sources**

Make "Investigatory Project Report" with following heading on it.

- First page- topic, submitted to/submitted by
- Certificate
- Acknowledgment
- Contents
- Introduction
- Theory/ Report based data
- Observation
- Conclusion
- Bibliography.

**A few suggested Projects.**

• Study of the presence of oxalate ions in guava fruit at different stages of ripening .

• Study of quantity of casein present in different samples of milk.

 • Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.

 • Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)

• Study of digestion of starch by salivary amylase and effect of pH and temperature on it.

• Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.

 • Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).

 • Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

INSTRUCTIONS

✔ Use loose sheets, one side plain and the other side ruled.

 ✔ Paste the related pictures or draw the diagrams wherever necessary.

✔ Give proper heading with relevant points.

 ✔ Use a hard cover file with tags and cover it properly.

✔ DO NOT use a plastic report/stick file.

# **BIOLOGY**

## *TASK –I*

**Make "Investigatory Project" (spiral binding) with following heading on it.**
- First page- topic, submitted to/submitted by
- Certificate
- Acknowledgment
- Contents
- Introduction
- Theory
- Observation
- Conclusion
- Bibliography


**Suggested Topics for Class XII/AISSCE 2025-26**

| Sr. No | Topic |
|---|---|
| 1. | Vaccines and Vaccination |
| 2. | Apomictic seeds |
| 3. | IVF/ART Special Mode of Reproduction |
| 4. | Cancer (Diagnosis, Symptoms, Treatment) |
| 5. | Drug abuse in teenagers |
| 6. | Effect of Pesticide in Food Chain (Bio magnification) |
| 7. | Eutrophication: Cause and Effect |
| 8. | Elisa and RT-PCR |
| 9. | Analysis of Water Samples for Microbial Load |
| 10. | Human Evolution |

## *TASK-II*

Complete the Biology practical file; write core experiments and spotting from comprehensive lab manual. Write each experiment on loose sheets (Left: Plain, right: Ruled).

### *A. List of Experiments*
1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population density by quadrat method.
3. Study the plant population frequency by quadrat method.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

### *B. Study and observer the following (Spotting):*
1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent
   slides (from grasshopper/mice).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian)

# ACCOUNTANCY

Make a project on the basis of the following instructions:
1.  Prepare a Comprehensive Project:
    Under this project, you have to frame a question of consisting at least 25 transactions, then do the following:
    1.  Pass the Journal entries
    2.  Prepare ledger accounts and balance them
    3.  Prepare a Trial balance
    4.  Prepare a Trading and Profit and Loss account
    5.  Prepare a Balance sheet
2.  Select a company of your choice and download the annual report for the year ending 31st March, 2025, then do the following (**See Note**)
    1.  Prepare a logo of the company
    2.  Paste the pictures of the Board of Directors
    3.  Write a note about the History of the company
    4.  Paste/Attach the Financial highlights of the company
3.  Prepare a Specific Project 1 on Ratio Analysis
    (i)   Write the meaning, advantages and limitations of Ratio Analysis
    (ii)  Paste the Balance Sheet and Statement of Profit & Loss Account of the company
    (iii) Solve any six ratios
4.  Prepare a Specific Project 2 on Cash Flow Statement
    (i) Write the meaning, advantages and limitations of cash flow statement
    (ii) Paste and Prepare the Cash flow statement of the company.

**Note:**
For downloading the Annual Report of the company use the following link
www.bseindia.com
www.nseindia.com

# ECONOMICS

## Grade-XII B/XII C

**The following projects have been assigned according to class Roll Numbers:**

**PROJECT 1**
Role of RBI in control of credit in India. (Roll No.1-5)

**PROJECT 2**
Growing natural prosperity for India's economy with organic farming. (Roll No.6-10)

**PROJECT 3**
Keep inflation in check, for a brighter economy ahead. (Roll No. 11-15)

**PROJECT 4**
Empowering India - Unleashing the digital Revolution through cashless online payment. (Roll No. 16-20)

**PROJECT 5**
Empowering Indian industries- A roadmap to maximise export potential and minimise imports through 'Make in India' strategy. (Roll no. 21-25)

**PROJECT 6**
Nurturing India's future- Tackling challenges in Human Capital Formation through education and Healthcare. (Roll no.26-29)

**\*You are requested to explore and research the topic and bring the hard copies  of the material, arranged in a file for the finalization of your project.**

# BUSINESS STUDIES

**PROJECT: PRINCIPLES OF MANAGEMENT**

**The students are required to visit any one of the following:**

1. A departmental store.
3. A fast food outlet.
2. An Industrial unit.
4. Any other organisation approved by the teacher.

**They are required to observe the application of the general Principles of management advocated by Fayol.**
**Fayol's principles**
1. Division of work.
2. Authority and responsibility.
3. Discipline
4. Unity of command
5. Unity of direction
6. Subordination of individual interest to general interest.
7. Remuneration of employees
8. Centralisation and decentralisation
9. Scalar chain
10. Order
11. Equity
12. Stability of personnel
13. Initiative
14. Espirit de corps

# POLITICAL SCIENCE

**Topic: Operation Sindoor – India's Humanitarian and Diplomatic Effort**

**Instructions**

You are required to prepare a project file on the topic "Operation Sindoor", highlighting India's recent humanitarian mission to evacuate its citizens from conflict zones.

**Objective :**

To understand how India responds to international crises through humanitarian operations and how such actions reflect its foreign policy, diplomatic relations, and global responsibilty.

**File Format :**

1. Cover Page – Title, Name, Class, Roll Number.
2. Acknowledgement
3. Certificate
4. Index
5. Introduction to Operation Sindoor
6. Background of the Conflict Situation
7. Details of the Operation (Timeline, Agencies involved, Evacuation stats)
8. Political and Diplomatic Analysis
9. Global and National Media Coverage
10. Conclusion
11. Bibliography (Sources used: news articles, official websites, etc.)

**Guidelines :**

1. The file should be 10–15 pages long.
2. Should be handwritten
3. Use headings, subheadings, bullet points, and include relevant images/maps.
4. Research from reliable sources only.
5. Avoid copying content directly from the internet.

# MATHEMATICS

# Activity 1

**OBJECTIVE**

To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \perp m\}$ is symmetric but neither reflexive nor transitive.

**MATERIAL REQUIRED**

A piece of plywood, some pieces of wires (8), nails, white paper, glue etc

**METHOD OF CONSTRUCTION**

Take a piece of plywood and paste a white paper on it. Fix the wires randomly on the plywood with the help of nails such that some of them are parallel, some are perpendicular to each other and some are inclined as shown in Fig.
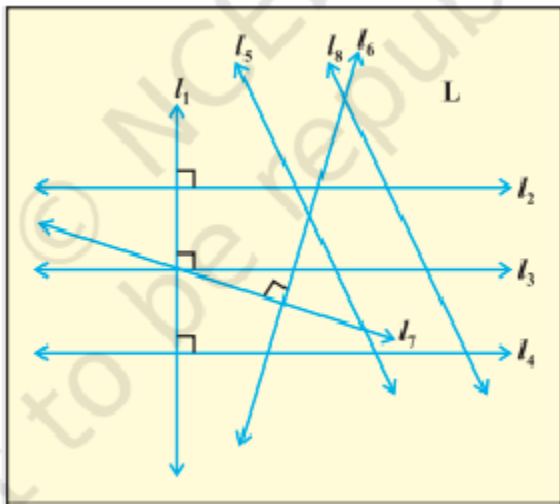


**DEMONSTRATION 1.**

1. Let the wires represent the lines $l_1, l_2, \ldots l_8$
2. $l_1$ is perpendicular to each of the lines $l_2, l_3, l_4$. [see Fig.]
3. $l_6$ is perpendicular to $l_7$ .
4. $l_2$ is parallel to $l_3$ , $l_3$ is parallel to $l_4$ and $l_5$ is parallel to $l_8$ .
5. $(l_1, l_2), (l_1, l_3), (l_1 , l_4 ), (l_6 , l_7) \in R$

**APPLICATION**

This activity can be used to check whether a given relation is an equivalence relation or not.

# Activity 2

**OBJECTIVE**
To demonstrate a function which is not one-one but is onto.

**MATERIAL REQUIRED**
Cardboard, nails, strings, adhesive and plastic strips.

**METHOD OF CONSTRUCTION**
1. Paste a plastic strip on the left hand side of the cardboard and fix three nails on it as shown in the Fig.3.1. Name the nails on the strip as 1, 2 and 3.
2. Paste another strip on the right hand side of the cardboard and fix two nails in the plastic strip as shown in Fig.3.2. Name the nails on the strip as a and b.
3. Join nails on the left strip to the nails on the right strip as shown in Fig. 3.3.
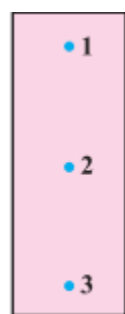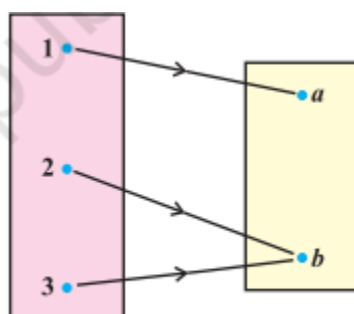


Fig. 3.1        Fig. 3.2                    Fig. 3.3

**DEMONSTRATION**

1. Take the set X = {1, 2, 3}
2. Take the set Y = {a, b}
3. Join (correspondence) elements of X to the elements of Y as shown in Fig. 3.3

**APPLICATION**
This activity can be used to demonstrate the concept of one-one and onto function.

# Activity 3

**OBJECTIVE**
To explore the principal value of the function $\sin^{-1}x$ using a unit circle.

**MATERIAL REQUIRED**
Cardboard, white chart paper, rails, ruler, adhesive, steel wires and needle.

## METHOD OF CONSTRUCTION

1. Take a cardboard of a convenient size and paste a white chart paper on it.

2. Draw a unit circle with centre O on it.

3. Through the centre of the circle, draw two perpendicular lines X'OX and YOY' representing x-axis and y-axis, respectively as shown in Fig. 6.1.

4. Mark the points A, C, B and D, where the circle cuts the x-axis and y-axis, respectively as shown in Fig. 6.1.

5. Fix two rails on opposite sides of the cardboard which are parallel to y-axis. Fix one steel wire between the rails such that the wire can be moved parallel to x-axis as shown in Fig. 6.2.
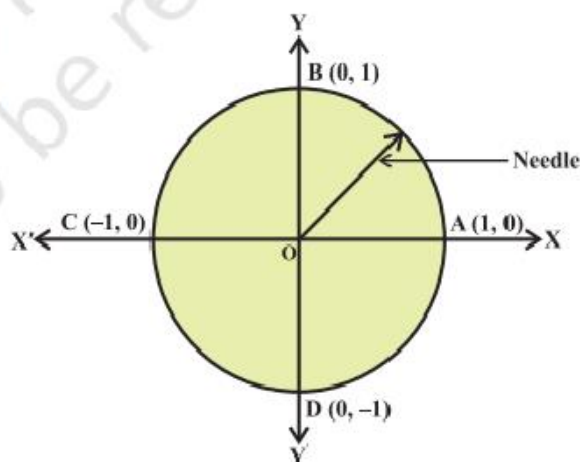


6. Take a needle of unit length. Fix one end of it at the centre of the circle and the other end to move freely along the circle Fig. 6.2.
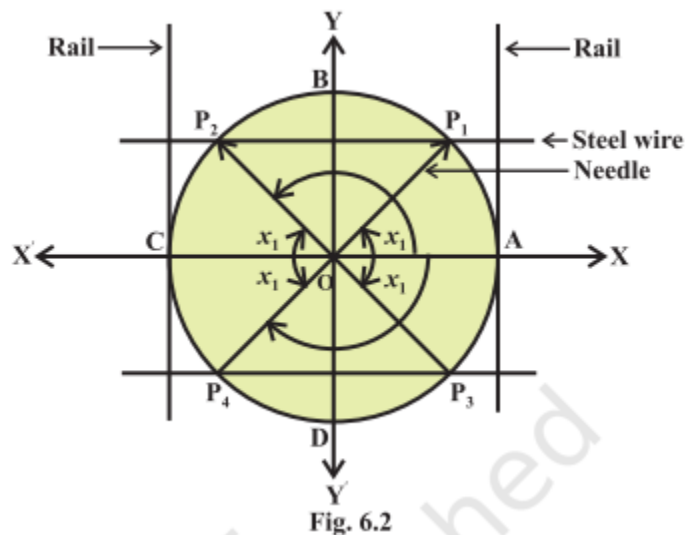


Fig. 6.2

## DEMONSTRATION

1. Keep the needle at an arbitrary angle, say $x_1$ with the positive direction of x-axis. Measure of angle in radian is equal to the length of intercepted arc of the unit circle.

2. Slide the steel wire between the rails, parallel to x-axis such that the wire meets with free end of the needle (say $P_1$) (Fig. 6.2).

3. Denote the y-coordinate of the point $P_1$ as $y_1$, where $y_1$ is the perpendicular distance of steel wire from the x-axis of the unit circle giving $y_1 = \sin x_1$.

4. Rotate the needle further anticlockwise and keep it at the angle $\pi - x_1$. Find the value of y-coordinate of intersecting point P2 with the help of sliding steel wire. Value of y-coordinate for the points P1 and P2 are same for the different value of angles, $y1 = \sin x1$ and $y1 = \sin(\pi - x_1)$. This demonstrates that sine function is not one-to-one for angles considered in first and second quadrants.

5. Keep the needle at angles $-x_1$ and $(-\pi + x_1)$, respectively. By sliding down the steel wire parallel to x-axis, demonstrate that y-coordinate for the points $P_3$ and $P_4$ are the same and thus sine function is not one-to-one for points considered in 3rd and 4th quadrants as shown in Fig. 6.2.

6. However, the y-coordinate of the points $P_3$ and $P_1$ are different. Move the needle in anticlockwise direction starting from $-\dfrac{\pi}{2}$ to $\dfrac{\pi}{2}$ and look at the behaviour of y-coordinates of points $P_5$, $P_6$, $P_7$ and $P_8$ by sliding the steel wire parallel to x-axis accordingly. y-coordinate of points $P_5$, $P_6$, $P_7$ and $P_8$ are different (see Fig. 6.3). Hence, sine function is one-to-one in the domian $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$ and its range lies between – 1 and 1.
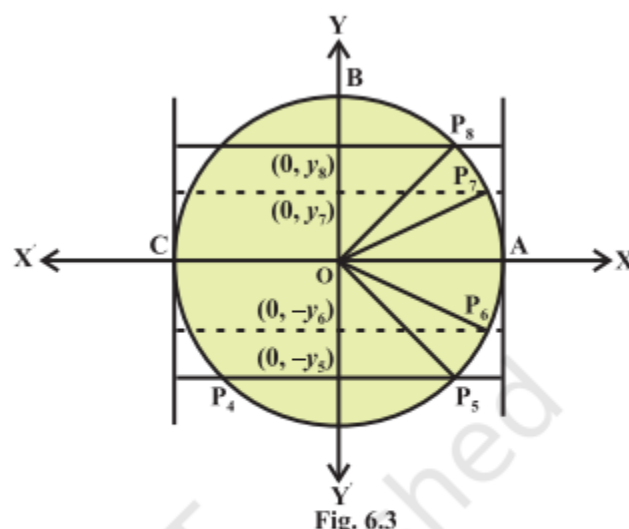


Fig. 6.3

7. Keep the needle at any arbitrary angle say θ lying in the interval $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$ and denote the y-coordinate of the intersecting point $P_9$ as y. (see Fig. 6.4). Then y = sin θ or θ = arc sin⁻¹y) as sine function is one-one and onto in the domain $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$ and range [–1, 1]. So, its inverse arc sine function exist. The domain of arc sine function is [–1, 1] and
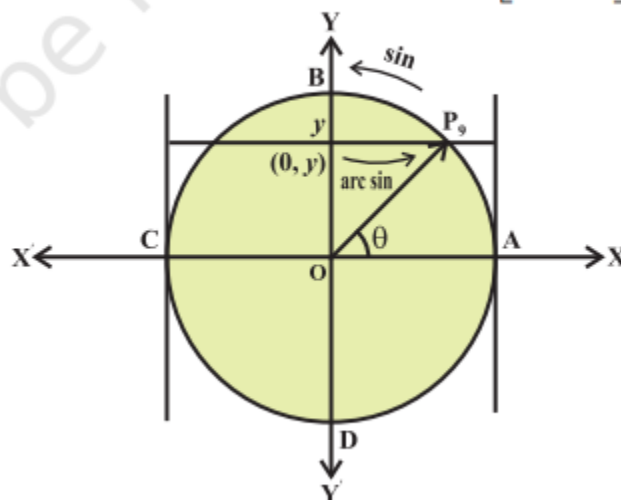


Fig. 6.4

range is $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$. This range is called the principal value of arc sine function (or $\sin^{-1}$ function).

## OBSERVATION

1. sine function is non-negative in _____ and _____ quadrants.

2. For the quadrants 3rd and 4th, sine function is _____.

3. $\theta = \text{arc sin } y \Rightarrow y = $ _____ $\theta$ where $-\dfrac{\pi}{2} \le \theta \le$ _____.

4. The other domains of sine function on which it is one-one and onto provides _____ for arc sine function.

## APPLICATION

This activity can be used for finding the principal value of arc cosine function ($\cos^{-1} y$).

## Activity 4

### OBJECTIVE

To demonstrate a function which is one-one but not onto.

### MATERIAL REQUIRED

Cardboard, nails, strings, adhesive and plastic strips.

### METHOD OF CONSTRUCTION

1. Paste a plastic strip on the left hand side of the cardboard and fix two nails in it as shown in the Fig. 4.1. Name the nails as $a$ and $b$.

2. Paste another strip on the right hand side of the cardboard and fix three nails on it as shown in the Fig. 4.2. Name the nails on the right strip as 1, 2 and 3.

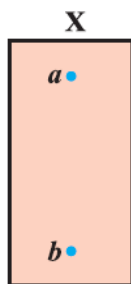3. Join nails on the left strip to the nails on the right strip as shown in the Fig. 4.3.
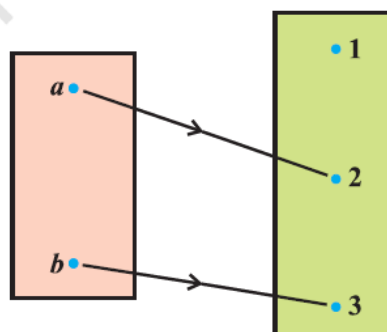


Fig. 4.1        Fig. 4.2        Fig. 4.3

## DEMONSTRATION

1. Take the set X = {*a, b*}

2. Take the set Y = {1, 2, 3}.

3. Join elements of X to the elements of Y as shown in Fig. 4.3.

1. The image of the element *a* of X in Y is _____.

   The image of the element *b* of X in Y is _____.

   So, the Fig. 4.3  represents a _____.

2. Every element in X has a _____ image in Y. So, the function is _____ (one-one/not one-one).

3. The pre-image of the element 1 of Y in X _____ (exists/does not exist). So, the function is _____ (onto/not onto).

   Thus, Fig. 4.3 represents a function which is _____ but not onto.

# Worksheet-01

## ONE MARKS QUESTIONS

1. Show by means of an example that the product of two non- zero matrices can be a zero matrix.

2. Construct a $3 \times 2$ matrix whose elements are given by $a_{ij} = e^{ix}\sin jx$.(Exemplar)

3. Solve for $x$ and $y$ for $x\begin{bmatrix} 2 \\ 1 \end{bmatrix} + y\begin{bmatrix} 3 \\ 5 \end{bmatrix} + \begin{bmatrix} -8 \\ -11 \end{bmatrix} = 0$ (Exemplar).

4. Give an example of matrices A,B and C such that AB = AC, Where A is non-zero matrix, but B≠C.

5. Show that $A^T A$ and $AA^T$ are both symmetric matrices for any matrix A. (Exemplar).

## FOUR MARKS QUESTIONS

6. If $A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{pmatrix}$ prove that $A^2 - 4A - 5I =$ Hence find $A^{-1}$

7. Given $A = \begin{pmatrix} 3 & -4 \\ 1 & -1 \end{pmatrix}$ show by induction that $A^n = \begin{pmatrix} 1+2n & -4n \\ n & 1-2n \end{pmatrix}$

8. If $X = \begin{bmatrix} 3 & 1 & -1 \\ 5 & -2 & -3 \end{bmatrix}$ and $Y = \begin{bmatrix} 2 & 1 & -1 \\ 7 & 2 & 4 \end{bmatrix}$, Find a matrix Z such that
   X+Y+Z is a zero matrix. (Exemplar).

9. Find the matrix A satisfying the matrix equation :
   $\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$. (Exemplar).

10. Prove by mathematical induction that
    $(A^T)^n = (A^n)^T$, where $n \in N$ for any square matrix A. (Exemplar).

11. If $F(\theta) = \begin{pmatrix} \cos\theta & -\sin\theta & 0 \\ \sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{pmatrix}$ show that $F(\theta)F(\varphi) = F(\theta + \varphi)$.

12. Find the inverse by elementary Operations $\begin{bmatrix} 2 & -1 & 3 \\ 1 & 3 & -1 \\ 3 & 2 & 1 \end{bmatrix}$.

13. Express the matrix $\begin{bmatrix} 2 & 3 & 1 \\ 1 & -1 & 2 \\ 4 & 1 & 2 \end{bmatrix}$ as the sum of a symmetric and skew symmetric matrix.

# Worksheet -02

1. Examine the continuity of the function $f(x) = \begin{cases} 1+x; x \le 2 \\ 5-x; x > 2 \end{cases}$ at x=2.

2. Show that the function $f(x) = \{2x - |x|$ is continuous at x=0.

3. Discuss the continuity of the function: $f(x) = \begin{cases} \dfrac{e^x - 1}{\log(1 + 2x)}, x \ne 0 \\ 7, x = 0 \end{cases}$

   at the point x=0 .

4. Examine the continuity of the functions at x=0

   (i) $f(x) = \begin{cases} \dfrac{x}{\sin 3x}, x \ne 0 \\ 3, x = 0 \end{cases}$   (ii) $f(x) = \begin{cases} \dfrac{\sin 2x}{\sin 3x}, x \ne 0 \\ 2x = 0 \end{cases}$

5. Determine the constants if the given functions are continuous at specified points

   (i) $f(x) = \begin{cases} ax + 5; x \le 2 \\ x - 1, x > 2 \end{cases}$ at x=2  (ii) $f(x) = \begin{cases} \dfrac{x^2 - 3x + 2}{x - 1}, x \ne 1 \\ k, x = 1 \end{cases}$ at x=1

# **PUNJABI**

ਹੇਠ ਲਿਖੇ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਤੇ ਛੇ ਤੋਂ ਸੱਤ ਪੰਨਿਆਂ ਦੀ ਤਸਵੀਰਾਂ ਸਹਿਤ ਫ਼ਾਈਲ ਬਣਾਓ।

ੳ.ਖ਼ੁਰਾਕ(ਕਿਸੇ ਇੱਕ ਰਾਜ ਜਾਂ ਪ੍ਰਦੇਸ਼ ਤੇ ਆਧਾਰਤ)

ਅ.ਪੰਜਾਬ ਦੇ ਮੇਲੇ ਤੇ ਤਿਉਹਾਰ

ੲ.ਬਜ਼ੁਰਗਾਂ ਦਾ ਘਟ ਰਿਹਾ ਸਤਿਕਾਰ(ਕਾਰਨ ਤੇ ਸੁਝਾਅ)

ਸ. ਕਰੋਨਾ ਕਾਲ ਸਮੇਂ ਪੇਂਡੂ ਤੇ ਸ਼ਹਿਰੀ ਜੀਵਨ ਦਾ ਅੰਤਰ

ਹ.ਕਰੋਨਾ ਕਾਲ ਸਮੇਂ ਆਨਲਾਈਨ ਪੜ੍ਹਾਈ

ਕ.ਕਰੋਨਾ ਕਾਲ ਸਮੇਂ ਉੱਭਰੀ ਲੋਕ ਸੇਵਾ ਭਾਵਨਾ

ਖ.ਕਰੋਨਾ ਸਮੇਂ ਪ੍ਰਦੂਸ਼ਣ ਦੀ ਸਥਿਤੀ

ਗ. ਕਰੋਨਾ ਤੋਂ ਬਾਅਦ ਸਕੂਲਾਂ ਦੀ ਸਥਿਤੀ ਤੇ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਵਿਵਹਾਰ
    ਵਿਦੇਸ਼ਾਂ ਵਿਚ ਜਾਣ ਦੀ ਹੋੜ(ਸ਼ੌਕ,ਮਜਬੂਰੀ ਜਾਂ ਸਮਾਜਿਕ ਰੁਤਬਾ)

ਕ.ਸੋਸ਼ਲ ਮੀਡੀਆ ਦਾ ਵਧ ਰਿਹਾ ਪ੍ਰਭਾਵ

ਖ.ਵਿਗਿਆਨੀ (ਸਮਾਜ ਨੂੰ ਦੇਣ)

ਗ.ਲੇਖਕ ( ਸਾਹਿਤਕ ਦੇਣ)

ਘ. ਮਹਾਂਪੁਰਸ਼ (ਜੀਵਨੀ ਤੇ ਉਪਦੇਸ਼)

Activat

## ਦੁਹਰਾਈ ਪੱਤ੍ਰਿਕਾ

ਪ੍ਰ੧ ਹੇਠ ਲਿਖਿਆਂ ਵਿਚੋਂ ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਤੇ ਪੈਰ੍ਹਾ ਰਚਨਾ ਕਰੋ।

    ੧.ਮੇਰਾ ਪਿੰਡ

    ੨.ਮੇਰੀ ਪਹਿਲੀ ਹਵਾਈ ਯਾਤਰਾ

ਪ੍ਰ੨. ਹੇਠ ਲਿਖੇ ਵਿਸ਼ੇ ਤੇ ਪੱਤਰ ਲਿਖੋ।

    ਤੁਹਾਡੇ ਸਕੂਲ ਵਿਚ ਸਰਕਾਰ ਵਲੋਂ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਰਦੀ ਲਈ ਗ੍ਰਾਂਟ ਆਈ ਹੈ।ਵੇਰਵੇ ਦੱਸਦੇ ਹੋਏ ਕਿਸੇ ਫਰਮ ਤੋਂ ਕੁਟੇਸ਼ਨ ਦੀ ਮੰਗ ਕਰੋ।

ਪ੍ਰ੩. ਹੇਠ ਲਿਖੇ ਅਖਾਣ ਕਿਸ ਮੌਕੇ ਤੇ ਵਰਤੇ ਜਾਂਦੇ ਹਨ।

        ੳ. ਘਰ ਦਾ ਸੜਿਆ ਵਣ ਗਿਆ,ਵਣ ਨੂੰ ਲੱਗੀ ਅੱਗ।

        ਅ. ਹਿੰਗ ਲੱਗੇ ਨਾ ਫਟਕੜੀ,ਰੰਗ ਚੋਖਾ ਆਵੇ।

        ੲ. ਕੋਹ ਨਾ ਚੱਲੀ ਬਾਬਾ ਤਿਹਾਈ।

        ਸ. ਗਿੱਦੜ ਦੀ ਮੌਤ ਆਉਂਦੀ ਹੈ ਤਾਂ ਉਹ ਸ਼ਹਿਰ ਵਲ ਭੱਜਦਾ ਹੈ।

        ਹ.ਹੱਥਾਂ ਬਾਝ ਕਰਾਰਿਆਂ ਵੈਰੀ ਮਿੱਤ ਨਾ ਹੋਏ।

# PHYSICAL EDUCATION

## Practical Manual file

**Practical 1-** Fitness tests administration (SAI Khelo India test)

**Practical 2**- Procedure for Asana, Benefits & contradiction for any two Asana for each lifestyle disease.

**Practical 3** - Any one IOA recognised sports/Game of choice. Labelled diagram of Field & equipments.Also mention its rules, terminology and skills.