



**DELHI INTERNATIONAL SCHOOL EDGE**  
**HOLIDAY HOMEWORK 2024 - 2025**  
**CLASS XII A**



Dear Students,

As the summer holidays approach, we hope you're looking forward to a well-deserved break filled with relaxation, fun, and plenty of sunshine! Before you dive into your vacation plans, we wanted to share some holiday homework to keep your minds engaged and active during the break.

Attached to this message, you'll find a set of assignments carefully crafted to reinforce and extend your learning beyond the classroom. These activities are designed to be enjoyable yet stimulating, offering you the opportunity to explore new ideas, develop your skills, and enrich your knowledge in various subjects.

While we encourage you to make the most of your time off, we also believe that learning is a lifelong journey that doesn't stop when the school bell rings. Whether you're traveling to exotic destinations, spending time with family and friends, or simply relaxing at home, we encourage you to find moments to engage with your holiday homework.

Remember, learning can take many forms, and the summer holidays present the perfect opportunity to discover new interests, pursue personal passions, and embark on exciting adventures. So, whether you're solving math puzzles, reading captivating stories, conducting science experiments, or exploring the wonders of nature, we encourage you to approach your holiday homework with enthusiasm and curiosity.

As you tackle each assignment, take pride in your efforts and celebrate your achievements, no matter how big or small. And if you have any questions or need assistance along the way, don't hesitate to reach out to us – we're here to support you every step of the journey.

Wishing you a summer filled with joy, laughter, and endless opportunities for growth and discovery. Have a fantastic break, and we look forward to hearing all about your adventures when you return!

Enjoy Your Summer Break! 🌞📚

Warm regards,

Class Teacher

## CHEMISTRY

**D) Handwritten project on any one of the following topics to be submitted.**

Please Note: Include the following in your projects:

1. Cover Page (having the details of the student and the topic as well as the Subject Teacher)
2. Acknowledgement
3. Certificate
4. Project Introduction
5. Body
6. Conclusion
7. Bibliography

### TOPICS-

1. Study of the presence of oxalate ions in guava fruit at different stages of ripening.
2. Study of the quantity of casein present in different samples of milk.
3. Preparation of soyabean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
4. Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.)
5. Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
6. Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
7. Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
8. Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chili powder and pepper.

### II) Write down the following experiments in practical file.

Exp.1 Determination of concentration/molarity of  $\text{KMnO}_4$  solution by titrating it against standard solution of Mohr's salt.

Exp.2 Determination of concentration/molarity of  $\text{KMnO}_4$  solution by titrating it against standard solution of oxalic acid.

Exp 3. Preparation of potash alum.

Exp 4. Salt analysis ( Ammonium carbonate)

Exp 5. Salt analysis ( $\text{FeSO}_4$ )

## PHYSICS

### (i) Write the experiments in the experiment file as per the given list .

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.

### (ii) Write the Activities in Activity file as per the given list.

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.
3. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

### (iii) Make a project file on the allotted topic.

1. To study various factors on which the internal resistance/EMF of a cell depends..
2. 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.

3. 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.
4. 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.
5. 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.
6. 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.
7. Ac generator
8. Transformer
9. Moving coil galvanometer
10. P-n Junction as forward biased
11. P-n Junction as reversed biased

Note :**Students May take any other topics as well.**

### BIOLOGY

Complete the Investigatory projects on the topics assigned

Click on the link to access the holiday homework

[https://docs.google.com/document/d/1P\\_Df9Es3ftcJLYdNdX1guHYQC3D9io\\_CbZo8-QfeFR4/edit?usp=drive\\_link](https://docs.google.com/document/d/1P_Df9Es3ftcJLYdNdX1guHYQC3D9io_CbZo8-QfeFR4/edit?usp=drive_link)

### MATHEMATICS

Case-1. Let  $x = f(t)$  and  $y = g(t)$  be the parametric forms with  $t$  as a parameter, then

$$\frac{dy}{dx} = \frac{dy}{dt} \cdot \frac{dt}{dx} = \frac{g'(t)}{f'(t)} \text{ where } f'(t) \neq 0.$$

On the basis of the above information answer the following questions

- i). If  $y = \sin pt$  and  $x = \sin t$ , then find the value of  $\frac{dx}{dy}$  at  $x=0$
- ii). If  $y = \sqrt{\tan \sqrt{\sec x}}$  differentiate  $y$  wrt  $\sec x$ .
- iii).  $y = x^{\frac{1}{x}}$ , find the derivative of  $y$  w.r.t  $x^x$ .
- iv).  $y = e^{\sqrt{3t}}$  and  $x = \frac{1}{\sqrt{t}}$  find  $\frac{d^2y}{dx^2}$ .
- v). Velocity of a car is represented by  $V = 3x^2/5$ , whereas distance  $x = 2t+5$ . find acceleration if  $a = \frac{dV}{dt}$ .

2. If  $[1 \ x \ 1] \begin{bmatrix} 1 & 3 & 2 \\ 0 & 5 & 1 \\ 0 & 3 & 2 \end{bmatrix} \begin{bmatrix} x \\ 1 \\ -2 \end{bmatrix} = 0$ , then What is the value of  $x$ ?

3. For what value of  $\lambda$ , the matrix  $A$  is a singular matrix where

$$A = \begin{bmatrix} 1 & 3 & \lambda + 2 \\ 2 & 4 & 8 \end{bmatrix}$$

4. If  $A = \begin{bmatrix} a & b \\ b & a \end{bmatrix}$  and  $A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}$ , then find the value of  $\alpha$  and  $\beta$ .

5. Matrix  $A = \begin{bmatrix} 0 & 2a & -2 \\ 3 & 1 & 3 \\ 3b & 3 & -1 \end{bmatrix}$  is given to be symmetric, find the value of

$a$  and  $b$ .

6. If A and B are skew symmetric matrices of the same order prove that  $AB + BA$  is symmetric matrix.
7. If  $A = \begin{bmatrix} 5 & 3 \\ 12 & 7 \end{bmatrix}$ , show that  $A^2 - 12A - I = 0$ . Hence find  $A^{-1}$ .
8. If  $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ , verify that  $A^2 - 4A - 5I = 0$ .  
And then find  $A^{-1}$ .
9. Using matrix method, solve the system of linear equations  
 $x - 2y = 10, 2x - y - z = 8$  and  $-2y + z = 7$
10. Determine the product  $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix} \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$   
and use it to solve the system of equations:
11.  $x - y + z = 4, x - 2y - 2z = 9, 2x + y + 3z = 1$   
Prove that the relation R in the set  $A = \{5, 6, 7, 8, 9\}$ , given by  $R = \{(a, b) : |a - b| \text{ is divisible by } 2\}$  is an equivalence relation. Find all elements related to element 6.
12. Let  $A = \{0, 1, 2, 3\}$  and define a relation R on A as follows:  
 $R = \{(0, 0), (0, 1), (0, 3), (1, 0), (1, 1), (2, 2), (3, 0), (3, 3)\}$ , Is R reflexive?  
Symmetric? transitive?

## COMPUTER SCIENCE

### Project Work:

#### Guidelines:

The aim of the class project is to create something that is tangible and useful using Python file handling/ Python-SQL connectivity.

This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline.

The aim here is to find a real-world problem that is worthwhile to solve.

Visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then you can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. You can be extremely creative here.

You can use a wide variety of Python libraries to create user-friendly applications such as games, software for their school, software for your disabled fellow students, and mobile applications, of course, to do some of these projects, some additional learning is required.

You should be sensitized to avoid plagiarism and violations of copyright issues while working on projects.

Suggested topics for Project:

- Chatbot Song
- Recommender System
- YouTube Transcript summarizer
- House Price Prediction
- Visualizing and forecasting stocks using Dash
- Resume Builder Web Application
- Student Result Management System
- Hospital Management System
- Weather Forecasting APP
- News Feed App
- Optical Character Recognition System (OCR)
- Library Management System
- Virtual Private Network
- e-Authentication System
- Real-time web search engine
- Task Management Application
- Chat App
- Face Detection
- Online Auction System
- Evaluation of Academic Performance
- Crime Rate Prediction
- Android Battery Saver System
- Online eBook Maker
- Mobile Wallet with Merchant Payment
- Restaurant Booking Website
- SMS Spam Filtering
- Twitter Sentiment Analysis
- Election Analysis

**Students May choose any other topics from the latest trends as well.**

## PHYSICAL EDUCATION

### RECORD PRACTICAL FILE

1. SAI KHELO INDIA TEST
2. BODY MASS INDEX (calculation of BMI)
3. FLAMINGO BALANCE TEST
4. COORDINATION TEST
5. PARTIAL CURL- UP
6. PUSH UPS FOR BOYS
7. MODIFIED PUSH UPS FOR GIRLS
8. 50m DASH OR 50m STANDING START
9. 600m RUN / WALK
10. SIT AND REACH FOR FLEXIBILITY
11. HARVARD STEP TEST
12. PROFICIENCY IN GAME AND SPORTS ( skill of any one IOA recognised sports/ game of choice)
13. ASANAS FOR EACH LIFESTYLE DISEASE
  - Obesity- Procedure,Benefits & contraindications of Tadasana,katichakrasana,Pawanmuktasana (any one yoga)
  - Diabetes- Procedure,Benefits & contraindications of Dhanurasana,Supta-vajarasana,Paschimottanasana (any one yoga)
  - Asthma- Procedure,Benefits & contraindications of KapalbhatiBhujangasana,Vakrasana (any one yoga)
  - Hypertension- Procedure,Benefits & contraindications of Ardha Halasana,Uttanpadasana,sitali pranayam (any one yoga)
  - Back Pain and Arthritis- Procedure,Benefits & contraindications of Gomukhasana,Makarasana,Nadi-Shodhana (any one yoga)

## PSYCHOLOGY

1.Select 5 person whom you most admire, either from real life or history. Collect information about their contribution in their respective field and identify the characteristics in their personality that have impressed you and why?

2. Compare each with yourself and identify

A. Traits that you share with each of them.

B. Trait you want to inculcate, how will you do that and why you want to do it.

3. Team work: Divide topic among yourself (2 person for each topic) and prepare powerpoint presentation on following topic:

1. Self concept

2. Psychodynamic approach

3. Behaviourist approach

4. Humanistic approach

5. Projective techniques

4. Complete Question & Answer of Chapter 2.

5. Analysis of movie Inside Out. Prepare a 1 page report about psychological observation.

## **ENGLISH**

Dear students,

Kindly follow the provided link and meticulously adhere to the specific instructions outlined therein while preparing your project. To be completed during the summer vacation period and submitted by July 15, 2024.

[https://docs.google.com/document/d/1\\_fcvdxFw8Y1AU0i05TqvXVIKJDxEe68NfxWL\\_ekX1E/edit?usp=drivesdk](https://docs.google.com/document/d/1_fcvdxFw8Y1AU0i05TqvXVIKJDxEe68NfxWL_ekX1E/edit?usp=drivesdk)