# Guru Amar Dass Public School, Goindwal Road, Kapurthala

## Grade :XII Science

## Summer Holidays' Homework

## Session 2025-26

## Important Instructions

- Neatness and presentation are common parameters for most of the activities assigned. Please maintain the quality of work done.
- Holiday's homework will be assessed on certain parameters and marks/grade will be awarded accordingly.
- To score well in your upcoming exams strike a balance between your leisure time and studies.
- Marks of Holidays Homework will be added in your Mid-Term Examination.

## BE A WONDERFUL HUMAN BEING: KEEP IN MIND TO

- Do the homework independently, only ask for assistance from your parents or guardians
- Remember to have a wide mouth container filled with water outside your house for the birds to get respite from the scorching heat.
- Pray to almighty daily and thank for the blissful life that you enjoy.
- Be a helping hand to your parents and learn the skill of shared responsibility.
- Do the work by following the guidelines given with each work or activity
- Spend time with your parents and grandparents, their rich experience will help you overcome challenges with ease.

## HEALTHY LIFESTYLE BE YOUR PRIORITY

- Give prime importance to your health. Eat lots of fruits, do exercise and get into yoga
- Pledge for "Eat Right -Less Sugar, Less Oil and Less Salt"
- Wash hands frequently, especially before and after meal.
- Avoid sharing of towel, handkerchief, brush with others.
- Drink plenty of water.

## REQUEST TO PARENTS

- Summer vacation time is an opportunity to spend the quality time with your child and make him/her feel special of his unique identity.

**So just spare sometime and do the following:**

- Talk about Omni presence of **God** and humility being developed with regular prayers and doing good deeds as to offer best prayer to the God. Take them some religious places.
- Let them feed the poor and share things with needy people with love, let them enjoy the **Art of Giving**.
- Talk about the importance of parents and elders.

# ENGLISH

1. ***Reading Comprehension:-***

Solve first four comprehension passages at practice paper.

2. ***Questionnaire Making***

Prepare 10 multiple choice questions from the each lesson:

| | | | |
|---|---|---|---|
| i) The Last Lesson | ii) Lost Spring | iii) Deep Water | iv) Rattrap |
| v) Indigo | vi) Third Level | vii) Journey to the end of the Earth | |
| viii) The Enemy | ix) On the Face of it | x) The Tiger King | |

3. ***Short composition***

***Notice Writing***

a) You are Dhruv/ Nishimura, student editor of your school magazine „The Buds'. Write a notice in not more than 50 words to be published to be placed on your school notice board, inviting short stories, articles, poems etc. from students of all classes for the magazine. Give all the necessary details.

b) Your school is organizing a singing competition for grade IX to XII. As a Head Boy/Girl draft a notice a for the school notice board.

c) Your school is organizing a Inter-School Science Exhibition on coming Sunday. As a Head Boy/Girl draft a notice a for the school notice board.

4. ***Long composition***

Last Week your school organized a Trip to Wonderland. Write a report in about 120-150 and give description of whole day.

5. ***Creation with quote***

Describe the following quote in your own words (100 -120 words) in the context of the Lesson : Lost Spring

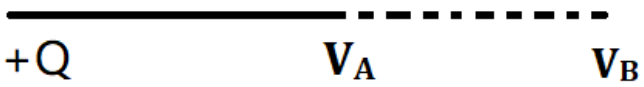
'Survival in the Seemapuri means Rag picking'

6. ***Compose one Poem based on any valuable theme.***
7. ***Revise whole Syllabus Covered Up to May***

# PHYSICS

- Sketch the electric field lines for two point charges $q_1 = q_2$ and $q_1 > q_2$ separated by a distance d.
- Why do the electrostatic field lines not form closed loops?
- Two metallic spheres A and B kept on insulting stands are in contact with each other. A positively charged rod P is brought near the sphere A. The two spheres are separated from each other & the rod P is removed. What will be the nature of Charges on spheres A and B?
- A Point charge Q $\mu$C is placed at the centre of a cube. What would be the flux through one face.
- An arbitrary surface encloses a dipole. What is the electric flux through this surface?
- In a parallel plate capacitor with air between the plates, each plate has an area of $6 \times 10^{-3} m^2$ and the distance between the plates is 3mm. Calculate the capacitance of the capacitor. If this capacitor is connected to a 100 V supply. What is the charge on each plate of the capacitor?
- A 12 pF capacitor is connected to a 50V battery. How much electrostatic energy is stored in the capacitor.
- Name the physical quantity whose S-I unit is $JC^{-1}$. Is it a scalar or a vector quantity?

❖ A point charge +Q is placed at point O as shown in the figure. Is the potential dops $V_A - V_B$ is positive, Negative or Zero?




❖ What is the amount of work done in moving a point charge Q around a circular arc of radius r at the centre of which another 'q' is located?

- **Complete the Lab Manual of Physics.**
- **Revise whole Periodic Test- I Syllabus.**
- **Practice numerical problems.**
  (1) Electric charges and Fields.
  (2) Electrostatic potential and Capacitance.
  (3) Dual nature of matter and Radiation.
  (4) Atom.

# CHEMISTRY

1. Calculate the Molarity of each of the following solutions:
   (a) 30 g of $co(NO_3)_2$. $6H_2O$ in 4.3 L of solution.
   (b) 30 ml of 0.5 M $H_2SO_4$ diluted to 500 ml.
2. Calculate (i) Molality (ii) Molarity and (iii) Mole fraction of KI if the density of 20 % (Mass/mass) aqueous KI is 1.202/g $mL^{-1}$
3. Henny's law content for $CO_2$ in water is 1.67 x $10^8$ Pa at 298 K. Calculate the quantity of $CO_2$ in 500mL of soda water when packed under 2.5 atm $CO_2$ pressure at 298K.
4. Vapor pressure of pure water at 298 K is 23.8 mm Hg. 50g of urea $NH_2CONH_2$ is dissolved in 850 g of water. Calculate the vapor pressure of water for this solution and its relative lowering.
5. Boiling point of water at 750 mm Hg is 99.63$^o$ C. How much sucrose is to be added to 500 g of water such that it boils at 100$^o$ C?
6. Concentrated nitric acid used is laboratory is 68% nitric acid by mass in aqueous solution. What should be the molarity of such a sample of the acid if the density of the solution is 1.504 g $ML^{-1}$?
7. The vapour pressure of water is 12.3 kPa at 300 K. Calculate the vapour pressure of 1 molal solution of a non-volatile solute in it.
8. Calculate the mass of a non-volatile solute (molar mass 40g mol) which should be dissolve in 114g octane to reduce its vapour pressure of 8-%.
9. Suggest the most important type of intermolecular interaction in the following pairs:
   (i) N-hexane and n-octane (ii) $I_2$ and $CCl_4$ (iii) $NaClO_4$ and water (iv) methanol and acetone (v) acetonitrile ($CH_3CN$) and acetone ($C_3H_6O$).
10. Based on solute-solvent interactions, arrange the following in order of increasing solubility in n-octane and explain:
    Cyclohexane, KCl, $CH_3OH$, $CH_3CN$

- **Complete the Lab Manual of Chemistry.**
- **Revise whole Periodic Test- I Syllabus.**

# BIOLOGY

1. Why the sex determination in case of honey bees colonies is haplodiploid?
2. Define the following chromosomal abnormalities:-
   (a) Down's Syndrome. (b) Turner's Syndrome
   (c) Klinefelter's syndrome
3. Why mendel select pea plant for his experiments
4. Explain the following mendelian disorders with examples:-
   (a) Colorblindness. (b) Sickle cell anaemia
   (c) Haemophilia
5. Why the human females are rarely haemophilic

6. What is phenylketonuria? Why the gene for this disorder is called pleiotropic gene?
7. How Mendel shows that traits may be dominant or recessive?
8. How mendel's law of independent assortment is well proved by mendel by taking the example of dihybrid cross?
9. How test cross of Mendel helps to find out the genotype of the $F_2$ offspring?
10. Which contrasting traits Mendel studied in pea plant during his experiments.

- **Complete the Lab Manual of Biology.**
- **Revise whole Periodic Test- I Syllabus.**

# MATHEMATICS

## Worksheet – 1

**SECTION – A**

**1.** Construct a 2x3 matrix, whose elements are given by $a_{ij} = \frac{3i+j}{2}$.

**2.** Find minors and co factors of each entry of third row $\begin{bmatrix} 6 & -7 & 8 \\ 1 & -3 & 1 \\ 2 & -1 & 4 \end{bmatrix}$

**3.** Discuss the continuity of the function $f(x) = \begin{cases} \frac{1-\cos x}{x^2}, & x \neq 0 \\ 1, & x = 0 \end{cases}$ at x=0

**4.** Differentiate : log $(x + \sqrt{a^2 + x^2})$

**SECTION – B**

**5.** Solve for 'x' $\tan(\cos^{-1}x) = \sin\{\cot(\frac{3}{4})\}$

**6.** If $f(x) = \begin{cases} \frac{x^3+x^2-16x+20}{(x-2)^2} & x \neq 2 \\ k & , x = 2 \end{cases}$ is continuous at x=2, find the value of K.

**7.** If $A = \begin{bmatrix} 1 & 3 & 2 \\ 0 & 1 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 0 & 1 \\ 2 & 3 \end{bmatrix}$, then show that $AB \neq BA$

**SECTION-C**

**8.** Let $f(x) = [x] + [-x]\ for\ x \neq 0\ and\ f(0) = \lambda$. For what value of $\lambda$, if any , is f continuous function?

**9.** Find the inverse of $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & -1 & 0 \\ -7 & 2 & 1 \end{bmatrix}$ and verify that $A^{-1}A = I_3 = AA^{-1}$

**10.** Discuss the consistency of the following system of equations :

$x+y+z=1$

$2x+2y+2z=2$

$3x+3y+3z=3$

## Worksheet - 2

**SECTION-A**

1. Discuss the continuity of the function $f(x) = \begin{cases} x^2, & x \leq 0 \\ 1-x, & x > 0 \end{cases}$ ,at x=0
2. If $x^y = e^{x-y}$ prove that $\frac{dy}{dx} = \frac{logx}{(1+logx)^2}$

**SECTION-B**

3. Differentiate $\sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$ $0 < x < 1$
4. If f(x) = $\sqrt{tan\sqrt{x}}$ then find $f^{-1}\left(\frac{\pi^2}{16}\right)$

**SECTION-C**

5. Examine for continuity, the function $\begin{cases} |x-a|\sin\left(\frac{1}{x-a}\right), x \neq a \\ 0 \qquad\qquad\qquad\quad , x = 0 \end{cases}$
6. If siny = x sin (a+y) prove that $\frac{dy}{dx} = \frac{sin^2(a+y)}{sina}$
7. Discuss the consistency of the following system of equations:

   3x-y+2z=3

   2x+y+3z=5

   x-2y-z=1
8. If x = $\sqrt{a^{sin^{-1}t}}$ show that $\frac{dy}{dx} = \frac{-y}{x}$

   y = $\sqrt{a^{cos^{-1}t}}$

## Worksheet - 3

**SECTION-A**

1. Find principal values of $\text{cosec}^{-1}(2)$ and $\text{cosec}^{-1}\left(\frac{-2}{\sqrt{3}}\right)$
2. Find minors and co factors of each entry of second row $\begin{bmatrix} 2 & 4 & 3 \\ 6 & 8 & 5 \\ 2 & 8 & 9 \end{bmatrix}$
3. Evaluate $\tan^{-1}\left(\frac{-1}{\sqrt{3}}\right) + \cot^{-1}\left(\frac{1}{\sqrt{3}}\right) + \tan^{-1}\left(sin\left(\frac{-\pi}{2}\right)\right)$
4. Find the value of a,b,c and d , $\begin{bmatrix} a & 3a-b \\ 2a+c & 3b-d \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$

**SECTION-B**

5. Prove that $\tan^{-1}\left\{\frac{\sqrt{1+cosx}+\sqrt{1-cosx}}{\sqrt{1+cosx}-\sqrt{1-cosx}}\right\} = \frac{\pi}{4} - \frac{x}{2}$ if $\pi < x < \frac{3\pi}{2}$
6. If x = asin2t (1+cos2t)

   y = bcos2t (1-cos2t)

   then show that $\left(\frac{dy}{dx}\right) at \quad t = \frac{\pi}{4} = \frac{b}{a}$
7. Find x ,If $\begin{bmatrix} x & -5 & -1 \end{bmatrix}\begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}\begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix} = 0$
8. If A= $\begin{bmatrix} 1 & -1 & 1 \\ 2 & 3 & 0 \\ 18 & 2 & 10 \end{bmatrix}$ ,show that A (adjA)=0

**Complete the Lab Manual Activities.**

1. **Revise Whole Periodic Test – I Syllabus.**
2. **Revise chapter 1 to 6 from Arihant book.**

# HINDUSTANI MUSIC VOCAL

1. Write the definition of the following:-
   a) Alankar  b) kan  c) khatka
   d) Meend  e) gamak  f) murki
2. Description of Raag Bhairav with notation
3. Description of Raag malkauns with notation
4. Write down Jhap taal with ek-gun, do-gun, tigun and chaugun laykaries
5. Description of Raag, Malkauns with Dhamar notation.

# PAINTING

- ✓ **Make 5 sheets of still life.**
- ✓ **Make 5 sheets of landscape.**

# PHYSICAL EDUCATION

- Make a Yoga chart with your own (Standing, sitting, laying) pictures.
- Write a report on fixtures and procedures:
  - Knockout (bye an seeding)
  - League (Stair Care and Cyclic Method)
- Make practical file (SP Publisher)

# PUNJABI

✓ ਪੰਜਾਬ ਦੇ ਮੇਲੇ ਅਤੇ ਤਿਉਹਾਰਾਂ ਤੇ ਇੱਕ ਪ੍ਰੋਜੈਕਟ ਫਾਈਲ ਤਿਆਰ ਕਰੋ।

✓ ਪੰਜਾਬੀ ਦੇ ਕੋਈ ਅੱਠ ਲੇਖਕ ਅਤੇ ਲੇਖਿਕਾ ਦੀਆਂ ਤਸਵੀਰਾਂ ਲਗਾ ਕੇ ਤੇ ਉਨ੍ਹਾਂ ਸੰਬੰਧੀ ਜਾਣਕਾਰੀ ਇੱਕਠੀ ਕਰਕੇ ਇੱਕ ਫਾਈਲ ਤਿਆਰ ਕਰੋ।

✓ ਟਰਮ – I ਤੱਕ ਪਾਠਕ੍ਰਮ ਯਾਦ ਕਰੋ।

# CELEBRATIONS

## World Environment Day Activity


**Let's nurture the nature so that we can have a better future. Hurray! its time to celebrate the World Environment Day on 5th June. Even a small change can make a huge difference to our world. Are you up for the change challenge? Plant trees on the eve of World Environment Day. Click the photographs and send to your Form Educators**


## FATHERS' DAY CELEBRATION

**"A father's love is eternal, unconditional, and irreplaceable"**

**On the account of Fathers' Day Celebration on 15 June, 2025, Make a favourite dish of your father with the help of your mother and serve it to your father.**

## INTERNATIONAL YOGA DAY

Yoga brings the body and mind together and is built on three main elements – movement, breathing and meditation.

We celebrate Yoga Day on 21st June every year, so to keep you and your family members fit it's important to do Yoga Daily