Guru Amar Dass Public School, Goindwal Road, Kapurthala
Grade :XII Science
Summer Holidays Homework
Session 2022-23

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

Questionnaire Making

a) Prepare 10 multiple choice questions from the each lesson

    i) The Last Lesson   ii) Lost Spring   iii) The Third Level

b) Prepare 10 multiple choice questions for the Poem:- My Mother at Sixty- Six

2. Short composition

a. Solve the following advertisement and notice in **50**words.

a) You are Sameer, the owner of Pink Power, cafe run only by women. You are looking for an interior designer to designthe interiors of the cafe. Draft a suitable advertisement for the same, to be published in the classified column of the National Daily., the local newspaper.

b) You are Dhruv/ Nishimura, student editor of your schoolmagazine „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.

3. Notice Writing

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.

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 -120words) 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 as shown in the figure. 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 μC 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 x $10^{-3}m^2$ 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?

$$\underline{\hspace{4cm}}\text{- - - - - - -}$$
$$+Q \qquad\qquad V_A \qquad\qquad V_B$$

- ❖ What is the amount of work done in moving a point charge Q around a circular are of radius r at the centre of which another 'q' is located?
- **Complete the Lab Manual of Physics.**
- **Revise whole Periodic Test- I Syllabus.**

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 1.67×10^8 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° 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 assorted 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

1. Solve the worksheets Given Below:

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. Find the value of a,b,c and d , $\begin{bmatrix} 2a+b & a-2b \\ 5c-d & 4c+3d \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 11 & 24 \end{bmatrix}$

SECTION-B

5. Find area of triangle whose vertices are (2)7,(1,1) and (10,8).

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 ≠ BA

8. If A=$\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ and B=$\begin{bmatrix} 1 & 2 \\ 4 & 3 \end{bmatrix}$,verify that adj(AB)=(adj B)(adjA)

SECTION-C

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

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

11. Discuss the consistency of the following system of equations :

    x+y+z=1

    2x+2y+2z=2

    3x+3y+3z=3

12. If A= $\begin{bmatrix} -5 & 2 \\ 5 & -1 \end{bmatrix}$ and B=$\begin{bmatrix} 5 & 2 \\ 5 & 1 \end{bmatrix}$ then verify $(AB)^{-1} = B^{-1}A^{-1}$

Worksheet - 2

SECTION-A

1. Construct a 3x4 matrix, whose elements are given by $a_{ij} = \frac{1}{2}|i - 3j|$.

2. Find minors and co factors of each entry of second column A= $\begin{bmatrix} 1 & -6 & 5 \\ 2 & -4 & 2 \\ 8 & -3 & 9 \end{bmatrix}$

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

4. Find the value of x,y,z and w , $\begin{bmatrix} x - y & z \\ 2x - y & w \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 0 & 5 \end{bmatrix}$

SECTION-B

5. Find x if the points (2,-5),(-4,5) and (x,15) are collinear.

6. If $\begin{cases} 3ax + b & \text{if } x > 1 \\ 11 & if\ x = 1 \\ 5ax - 2b & if\ x < 1 \end{cases}$ is continuous at x=1,find the value of a and b.

7. If A=$\begin{bmatrix} 1 & 0 \\ 2 & 3 \end{bmatrix}$, B = $\begin{bmatrix} 0 & 1 & 2 \\ 3 & 2 & 1 \end{bmatrix}$ and C=$\begin{bmatrix} 1 & 0 & 4 \\ -2 & 1 & 0 \\ 3 & 2 & 6 \end{bmatrix}$,, verify (AB)C=A(BC)

8. Find the adjoint of matrix A $= \begin{bmatrix} -1 & -2 & -2 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$ and hence show that A(adjA)=$|A|HDHDHH$

SECTION-C

9. Examine for continuity, the function $\begin{cases} |x - a| \sin\left(\frac{1}{x-a}\right), x \neq a \\ 0 \qquad\qquad , x = 0 \end{cases}$

10. For the matrix A=$\begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$, find x and y so that $A^2 + xI = yA$. Hence find A^{-1}

11. Discuss the consistency of the following system of equations:

$\qquad$ 3x-y+2z=3

$\qquad$ 2x+y+3z=5

$\qquad$ x-2y-z=1

12. If A= $\begin{bmatrix} 2 & 9 \\ 5 & 6 \end{bmatrix}$ and B=$\begin{bmatrix} 5 & 2 \\ 6 & -2 \end{bmatrix}$ then verify $(AB)^{-1} = B^{-1}A^{-1}$

Worksheet - 3

SECTION-A

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

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. Find the relation between a and bso that the functin f defined by $f(x) = \begin{cases} ax + 1, if, & x \leq 3 \\ bx + 3 & , & x > 3 \end{cases}$

,is continuous at x=3

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. Find the equation of line whose vertices are (1,2) and (3,8).

6. Find a and b so that the function $f(x)=\begin{cases} 1 & , \ x \le 3 \\ ax+b & , \ 3 < x < 5 \\ 7 & , \ x \ge 5 \end{cases}$,may be continuous at x=3 and x=5.

7. Find x ,If $[x \ -5 \ -1 \ ]\begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}\begin{bmatrix} x \\ 4 \\ 1 \end{bmatrix}=0$

8. If A=$\begin{bmatrix} 1 & -1 & 1 \\ 2 & 3 & 0 \\ 18 & 2 & 10 \end{bmatrix}$,show that A (adjA)=0

SECTION-C

9. For the value of a and b ,the function $f(x) =\begin{cases} x^2 & , \ x \le c \\ ax+b & , \ x > c \end{cases}$ is differentiable at x=c.

10. Find a 2x2 matrix B,such that $\begin{bmatrix} 2 & 5 \\ -3 & 7 \end{bmatrix} B = \begin{bmatrix} 17 & -1 \\ 47 & -13 \end{bmatrix}.$

11. Find the all λ for which the system of equations

X+2y-3z=1

2x- λ y-3z=2

X+2y+ $\lambda z = 3$ has unique solution. Find the solution for $\lambda = 0$.

2. **Complete the Lab Manual Activities.**

3. **Revise Whole Periodic Test – I Syllabus.**

MUSIC

1. Write the definations of the following
   a) Alankar
   b) Alap
   c) Taan
   d) Meend
2. Description of Raag Bhairav with notation
3. Description of Raag Bageshwari with notation
4. Write down the Dhamar taal with ek-gun and do-gun laykaries
5. Write down Jhap taal with ek-gun and do-gun laykaries

PAINTING

❖ Prepare Portfolio Paintings on the given topics:-
   ➢ 4 Paintings – **Landscape**
   ➢ 4 Paintings – Still Life
   ➢ 2 Indian Folk Paintings

Make a article with Best Out of Waste Material.

PHYSICAL EDUCATION

➢ Make a Balanced Diet Chart on your project file.
➢ Write a report on fixtures and procedures :-
   ✓ Knock-out (Bye and seeding)
   ✓ League (Stair Care and Cyclic Method.
➢ Revise and Learn Periodic Test – I Syllabus.

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

On the account of Fathers' Day Celebration on 19 June, 2022, Make a favourite dish of your father with the help of your mother and serve it to your father. **Click the photographs and short clips** and send to your Form Educator.

INTERNATIONAL YOGA DAY

To keep you and your family members fit it's important to do yoga daily.

We celebrate YOGA DAY on 21st June so on that day all the Family members should do yoga and send the photos and videos to the Form Educator.