# BHATNAGAR INTERNATIONAL SCHOOL

## PASCHIM VIHAR

## HOLIDAY HOME WORK

## STREAM - SCIENCE

## Class XII(2020-21)

**Dear Students**

**It's time again for a rejuvenating summer break. As a global community we are facing unprecedented changes to our daily lives, leaving us looking for new ways to spend our time creatively.**

**Investing time in learning and development is one thing that can be controlled. Now is the time to expand your knowledge base, upskill and even reskill.**

- **The COVID times have upended family life around the world. Bond with your family members by spending quality time with them.**
- **Exercising improves strength and agility. Yoga will help you detox and boost your stamina.**
- **Enjoy growing plants that emit oxygen like tulsi and aloe vera.**
- **Painting and sketching soothes your mind in a creative way.**
- **Reminiscing memorable times put your collection of pics in collages. You may make videos clubbing pics together.**
- **It is always a great idea to get engrossed in a captivating book. Read and enhance your knowledge with genres that interest you.**
- **Learning a new language gives you an edge over others. Opt for online classes and apps like Duolingo that offer simple ways to learn a new language.**
- **Put your game face on. The charm of evergreen board games bond families together.**
- **Whip simple recipes for your loved ones.**
- **Indulge your thinking nuggets to the best by creating your own blogs.**

**When you're going through challenging times**
**Act instead of talking**
**Show instead of telling**
**Prove instead of promising.**
**IT'S TIME FOR INTROSPECTION , RESILIENCE AND FAITH**

## SUBJECT : ENGLISH

# TOPIC : Ek Bharat Shreshtha Bharat

**India is a land of people of diverse cultures and it is imperative to maintain and strengthen the fabric of traditionally emotional bonds between the people of our country so that a spirit of national integration is promoted. It is only through initiatives like "Ek Bharat Shreshtha Bharat" that people can understand and appreciate this glorious manifestation of diverse cuisine, music, dance, theatre, movies and films, handicrafts, sports, festivals, paintings, sculptures etc. will enable people imbibe the innate chord of binding and brotherhood.**

**LINK LESSON: INDIGO**

1. **Create a fact file on the chapter, replete with pictures giving detailed summary and character sketch of Mahatma Gandhi.**
2. **Record a V LOG featuring the scenic state of Sikkim and it's various facets ( include food, culture, language, people etc).**
   **(Presentation, Creativity, Originality and Content must be taken into account while creating the V LOG).**

**Write a descriptive paragraph on Sikkim in 100 -120 words on A-4 size sheet.**

## SUBJECT : MATHEMATICS

# Matrices

Q1. Construct a $2\times3$ matrix whose elements are given by $a_{ij}=\frac{1}{2}|5i-3j|$.

Q2. If a matrix has 12 elements, what are the possible orders it can have?

Q3. Write the order of each of the following matrices:

(i) $A=\begin{bmatrix}3 & 5 & 4 & -2\\ 0 & \sqrt{3} & -1 & \frac{4}{9}\end{bmatrix}$ (ii) $B=\begin{bmatrix}6 & -5\\ \frac{1}{2} & \frac{3}{4}\\ -2 & -1\end{bmatrix}$ (iii) $C=\begin{bmatrix}7 & -\sqrt{2} & 5 & 0\end{bmatrix}$

(iv) $D=\begin{bmatrix}8 & -3\end{bmatrix}$ (v) $E=\begin{bmatrix}-2\\ 3\\ 0\end{bmatrix}$ (vi) $F=[6]$

Q4. Construct a $2\times3$ matrix whose elements are given by $a_{ij}=(2i-j)$.

Q5. Construct a $2\times2$ matrix whose elements are $a_{ij}=\frac{(i+2j)^2}{2}$.

Q6. Let $A=\begin{bmatrix}2 & 4\\ 3 & 2\end{bmatrix}, B=\begin{bmatrix}1 & 3\\ -2 & 5\end{bmatrix}$ and $C=\begin{bmatrix}-2 & 5\\ 3 & 4\end{bmatrix}$, find:

(i) *A + 2B* (ii) *B – 4C* (iii) *A – 2B + 3C*

Q7. If $5A = \begin{bmatrix} 5 & 10 & -15 \\ 2 & 3 & 4 \\ 1 & 0 & -5 \end{bmatrix}$, find *A*.

Q8. Find the values of *x* and *y*, when

(i) $\begin{bmatrix} x+y \\ x-y \end{bmatrix} = \begin{bmatrix} 8 \\ 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 2x+5 & 7 \\ 0 & 3y-7 \end{bmatrix} = \begin{bmatrix} x-3 & 7 \\ 0 & -5 \end{bmatrix}$

(iii) $2\begin{bmatrix} x & 5 \\ 7 & y-3 \end{bmatrix} + \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 6 \\ 15 & 4 \end{bmatrix}$

Q9. If $A = \begin{bmatrix} 1 & -1 & 2 \\ 3 & 2 & 0 \\ -2 & 0 & 1 \end{bmatrix}, B = \begin{bmatrix} 3 & 1 \\ 0 & 2 \\ -2 & 5 \end{bmatrix}$ *and* $C = \begin{bmatrix} 2 & 1 & -3 \\ 3 & 0 & -1 \end{bmatrix}$ then

Verify that *(AB) C = A (BC)*.

Q10. If $A = \begin{bmatrix} 3 & 2 \\ 1 & 0 \end{bmatrix}, B = \begin{bmatrix} 1 & -2 & 5 \\ 0 & 7 & 3 \end{bmatrix}$ *and* $C = \begin{bmatrix} 8 & 1 & -6 \\ 2 & -5 & 0 \end{bmatrix}$, verify that

*A (B + C) = (AB + AC)*

# SUBJECT : PHYSICAL EDUCATION

Q1 Write any one game of your choice out of the list below .

- Basketball
- Football
- Handball
- Hockey
- Cricket

Including ÷

1 History of the game
2 Draw a neat diagram of field / court
3 Rules and Regulations
4 Fundamental skills of the game
5 Terminology of the game
6 Sports personalities of the game
7 Important Tournament of the game

Q2 **Write the Benefits , Procedure , and Contraindications for any 10 Asanas for lifestyle disease.**
Disease like

- Obesity
- Diabetes
- Asthma
- Hypertension
- Back pain

Q3.**LEARN CHAPTER**

1. planning in sports
2. sports and nutrition
3. yoga n lifestyle
4. physical education and sports for cwsn

## SUBJECT : PAINTING

1. Observe the nature around you and create any 5 live landscape painting as per your view over half imperial (A-2) size sheets - cartridge or ivory with any painting medium (only in acrylic paints, poster paints or water colours).
   (NOTE: No silhouette paintings to be entertained.)

2. Draw and paint any 3 compositional paintings based on some festival scene or market scene or village scene on half imperial (A-2) size sheets - cartridge or ivory with any painting medium (only in acrylic paints, poster paints or water colours).
   (NOTE: No silhouette paintings to be entertained.)

3. Create free-hand live sketches of human figures in different poses namely of the people you see in your surroundings in pencil medium over A-4 size art file. You are supposed to maintain two sketch files in this reference.

## SUBJECT :PHYSICS

1. Make a powerpoint presentation as per the topics allotted.

- PPTs to be made by students individually. This is not a group task
- For Topics mentioned in front of your name kindly refer to Notes and S.L Arora

## PHYSICS ASSIGNMENT

1) State the principle of quantization of electrical charges.
2) Define electric field intensity. Write its expression due to a point charge and find itsdimension.
3) Draw electric field lines of an electric dipole.
4) Write three properties of electric field lines.
5) Define electric dipole moment. What is its unit in S.I system?
6) Derive an expression for the torque acting on an electric dipole placed in a uniform electric field and hence find its potential energy.
7) What do you mean by electric potential? Derive an expression for it due to a point charge.

8) Explain three properties of equipotential surfaces.
9) State Gauss's theorem and using it derive the expression for electric field due to a uniformly charged spherical shell.
10) Write the principle of a capacitor and derive expression for energy stored in a capacitor.

**TOPIC: ELECTROSTATICS**

1) Calculate the electrostatic force between two alpha particles at a distance of 2x 10 (-5)m between them.

2) Why do electric field lines never cross each other?
3) Derive an expression for the electric field at a point on the equatorial line of an electric dipole.
4) No work is done in moving a test charge over an equipotential surface. Why?
5) Derive an expression for the capacitance of a parallel plate capacitor. On what factors does the capacitance of parallel plate capacitor depend?
6) A charge Q μC is placed at the centre of a cube. What is the electric flux coming out from any one surface.
7) Two capacitor of capacitances 2μF and 2μF are connected first in series and then parallel. What is the ratio of their capacitances?
8) What is electrostatic shielding.
9) A parallel plate capacitor is charged by a battery. After some times the battery is disconnected and a dielectric with its thickness equal to the plate separation is inserted b/w the plates .How will (i) the capacitance of the capacitor (ii) potential difference b/w the plates and (iii) the energy stored in the capacitor be affected?
10.) Calculate the equivalent capacitance between the points A and B in the combination shown below:
Given C1= 5μF; C2= 10μF ; C3= 15μF; C4=30μF

# SUBJECT : BIOLOGY

1. Students to complete the assignments of all the chapters (CH:2 to CH:6) shared with them and a keep a record of it.
2. Project work: Students to complete their respective investigatory projects as directed by faculty in class.

# SUBJECT : CHEMISTRY

- Complete the class work for chapter 2 ( solutions ) and 10 (haloalkanes and haloarenes).
- Do all NCERT EXCERISE and INTEXT questions of chapter- 2 and 10.
- Do previous years questions given as the assignment already in class notebook.
- Make a list of all reactions in chapter 10 as a separate assignment.
- Complete an investigatory project.

  A few suggested projects

• Study of 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 powder, chilli powder and pepper.

Note: Any other investigatory project, which involves experimental verification, can be chosen with the approval of the teacher.

(Project will be allotted on the basis of first come first serve basis)

# SUBJECT : COMPUTER SCIENCE

**PRACTICAL FILE WORK**

**Write the following programs on Python editor, and place the printouts of the code and the output screen shots in a ring file.**

1. Define a function that receives a number and checks whether its prime or not.
2. Write a function to find the factorial of a number.
3. Write a function that receive a 3-digit number and calculates the sum of squares of its digits.
4. Define a function that accepts a sentence and calculate the number of upper-case letters and lower-case letters
5. Write a program to get a string from a given string where all occurrences of its first char have been changed to '$', except the first char itself.
6. Read a text file line by line and display each word separated by a #.
7. Read a text file and display the number of vowels/ consonants/ characters in the file.
8. Read a text file and display the number of uppercase/ lowercase characters in the file.
9. Write a python program to read the content of the text file diary.txt line by line and print the same on the screen.
10. Write a python program to read last 2 lines of a text file.
11. Write a program to count the words "to" and "the" present in the text file "Poem .txt".
12. Write a python program that copies one file to another.
13. Remove all the lines that contain the character `a' in a file and write it to another file.
14. Write a program that appends the content of one file into another.
15. Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
16. Create a binary file with roll number, name and marks. Input a roll number and update the marks.
17. Write a python program to read a csv file.

18. Write a python program to write onto a csv file.
19. Create your own python module and use it in another program. **Example**: A module Area.py with function circle () and rectangle () with appropriate arguments, it finds the area of a circle and the rectangle. Use this module by importing it in another program.
20. Write a python program to recursively find the factorial of a natural number.
21. Write a recursive code to find the sum of all elements of a list.
22. Write a recursive code to compute the nth Fibonacci number.
23. Write a recursive code to compute the perform the binary search in sorted list of numbers.

**PROJECT WORK**

The aim of the project should be to create something that is tangible and useful using Python / Python and SQL connectivity.

Use a wide variety of Python libraries to create user friendly applications such as games, software for specific purpose or any mobile application. Surf internet for adding additional features. The aim here is to find a real-world problem that is worthwhile to solve.

Examples for the Projects:

- Salary Management Application
- Library Management System
- Banking System

## SCHEDULE FOR SUBMISSION OF ASSIGNMENT SHEETS CLASS – XII(2020-21)

| DATES | SCIENCE |
|---|---|
| 6.6.20 | PHYSICS |
| 13.6.20 | CHEMISTRY / PHYSICAL EDUCATION |
| 20.6.20 | COMPUTER SCIENCE/BIO |
| 27.6.20 | MATHS / ENGLISH |

***SUBJECTWISE PRACTICE WORKSHEET WILL BE UPLOADED ON MICROSOFT TEAMS AND E- CONNECT APP.**