



HIMALAYAN

PROGRESSIVE SCHOOL

Kichha

My Name Is _____

I Study In Class _____





HIMALAYAN PROGRESSIVE SCHOOL

SUMMER HOLIDAY'S HOMEWORK

CLASS XII SCIENCE (2021-22)

ENGLISH

Q.1- Make a project on History of English Language covering following Headings.

- i. What is Language?
- ii. Origin of English and development as World Language.
- iii. Role of English in India (before and after Independence)
- iv. Contribution of Robert Frost in the development of English Language.
- v. Role of English Language in improving student's personality.
- vi. Importance of English Language in this modern era.
- vii. Conclusion.

Q.2- Prepare your handwritten weekly NEWS PAPER on 2 A3 size White Sheets (total 4 sides). Collect positive news for a week first, arrange them as International News, National News, Sports News, Business News etc. You can paste related pictures, give advertisements, weather forecast etc. Give suitable name to your newspaper.

- **Watch the two English movies- “Bend it like Beckham” and “Life of Pi”**

Write down your views on these movies. (Min 150 words each)

MATHEMATICS

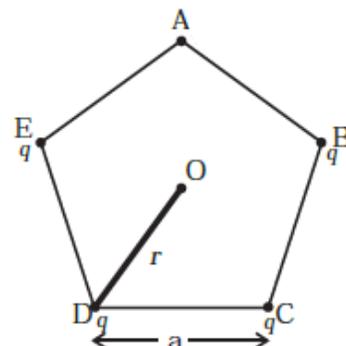
- Q 1. Construct 5 square matrices of order 3. Check whether these matrices are singular or non-singular.
- Q 2. Take any nine natural numbers and construct a square matrix of order 3. Check whether this matrix is invertible or not. If the given matrix is invertible then find its inverse by using cofactors.
- Q 3. Construct three linear equations in three variables related to daily life problems. Then solve the equations using matrix method.
- Q 4. Make a report on survey of five families regarding number of members in a family. Construct different types of matrices for each family for the number of members.
- Q 5. Write the properties of the matrices and give the example of each related to daily life.
- Q 6. Construct a square matrix of order 3 and find its inverse. Show that the product of the matrix and its inverse is always an identity matrix.
- Q 7. Consider any three points in a plane and check whether these points are collinear or not by using the method of determinants. If the points are non-collinear, find the area of the triangle so formed by using determinants.

- Four assignments on the below mentioned topics will be shared as per schedule via **Khan Academy**. You must submit the assignments on the same day. Marks secured in the assignments will have weightage in half yearly examinations.
 1. Vector basics (8/06/2021)
 2. Vector dot product (12/06/21)
 3. Determinants (14/06/21)
 4. Matrices (16/06/21)

PHYSICS

1. Do the activity that demonstrate electric charge by Constructing a Simple Electroscope and write its construction, working in brief. **(use only waste material)**.
2. Metallic spherical shell has a inner radius R_1 and outer radius R_2 , A charge Q is placed at the centre of the spherical cavity. What will be the surface charge density on (i) the inner surface (ii) the outer surface.
3. Two point charges at a distance r in air exert a force F on each other. At what distance will these charges experience the same force F in a medium of dielectric constant k ?
4. Two point charges q_1, q_2 are located at $(a, 0, 0)$ and $(0, b, 0)$ respectively. Find the electric field due to both the charges at the point $(0, 0, c)$.
5. Three charges $q, q,$ and $-2q$ are placed at the vertices of an equilateral triangle. What is the dipole moment of the system ?

6. Four particles each having a charge q are placed on the vertices of a regular pentagon. the distance of each corner from the centre is ' r '. Determine the electric field at the centre of the pentagon.



7. Five point charges each of value q are placed on five vertices of a regular hexagon of side L metres. Find the magnitude of force on a charge $-q$ coulomb placed at the centre of the hexagon.
8. Eight identical point charges of q coulomb each are placed at the corners of a cube of each side 0.1 m. Calculate the electric field at the centre G of the cube .calculate the field at the centre when one of the four corner charge is removed .
9. If the total charge enclosed by a surface is zero, does it imply that the electric field every where on the surface is zero ? conversely ,if the electric field everywhere on the surface is zero ,does it imply that the charge inside is zero?
10. An infinite number of charges, each equal to q are placed along X axis at $x=1,2,3,4,8,\dots$ and so on
 - (i) Find the electric field at the point $x=0$ due to this set up of charges
 - (ii) What will be the electric field, if the consecutive charges have opposite signs
11. A $4 \mu\text{F}$ Capacitor is charged by 200 V supply. It is then disconnected from the supply and is connected to another uncharged $2\mu\text{F}$ capacitor .Find energy lost in this process

12. Find the resistance of the resistors shown in figure.

(If you have taken a black & white printout, Check digital copy before answering the question. You can zoom the picture to see colour strips)



13. Write any five examples of non ohmic conductors draw V-I characteristics

14. Alloys of metals have greater resistivity than their constituent metals. Explain with two examples.

15. **Online Assignment:** Link of following topics will be shared from khan Academy in google class room. You all need to solve given topics in the app only. Assignment must be submitted on the same day. Assignment will have weightage in half yearly examinations.

Date:	Topics
07/06/2021	Capacitance and parallel plate capacitors
10/06/2021	Effect of dielectric on capacitance
14/06/2021	Combination of capacitors
17/06/2021	Energy stored in a capacitor
21/06/2021	Miscellaneous questions on capacitance

CHEMISTRY

a) Learn & Write the following name reaction of organic chemistry:

Sandmeyer Reaction	Fittig Reaction	Etard reaction	Cannizzaro reaction
Gattermann Reaction	Friedel-Crafts alkylation Reaction	Gatterman– Koch reaction	Kolbe electrolysis
Balz-Schiemann Reaction	Friedel-Crafts acylation reaction	Clemmensen Reduction	Hell-Volhard-Zelinsky (HVZ) reaction
Finkelstein Reaction	Reimer-Tiemann Reaction	Wolff Kishner Reduction	Gabriel phthalimide synthesis
Swarts Reaction	Kolbe's Reaction	Aldol reaction	Coupling Reactions
Wurtz Reaction	Rosenmund Reduction	Aldol condensation	Carbylamine reaction
Wurtz-Fittig Reaction	Stephen reaction	Cross aldol condensation	Hinsberg's Test

b) Learn and write the name of element and symbol of group number 15, 16, 17 & 18 and the elements of 3d and 4d series of d block.

c) Solve the numerical:

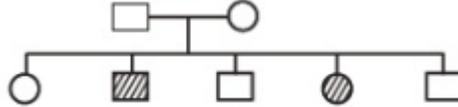
- i. The density of copper metal is 8.95 g cm^{-3} . If the radius of copper atom is 127.8 pm , is the copper unit cell a simple cubic, a body-centred cubic or a face centred cubic structure? (Given: At. mass of Cu = 63.54 g mol^{-1} and $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$)
- ii. Iron has a body centred cubic unit cell with a cell dimension of 286.65 pm . The density of iron is 7.874 g cm^{-3} . Use this information to calculate Avogadro's number. (At mass of Fe = 55.845 u)
- iii. What is the distance between Na^+ and Cl^- ions in NaCl crystal if its density is 2.165 g/cm^3 ? [Atomic Mass of Na = 23u , Cl = 35.5u ; Avogadro's number = 6.023×10^{23}]
- iv. An element crystallizes in a structure having fcc unit cell of an edge 200 pm . Calculate the density if 200 g of this element contains 24×10^{23} atoms.
- v. Niobium crystallizes in body-centred cubic structure. If its density is 8.55 g cm^{-3} , calculate atomic radius of niobium, given its atomic mass 93u .
- vi. 15 g of an unknown molecular substance was dissolved in 450 g of water. The resulting solution freezes at -0.34°C . What is the molar mass of the substance? (K_f for water = $1.86 \text{ K kg mol}^{-1}$).
- vii. A solution of glycerol ($\text{C}_3\text{H}_8\text{O}_3$) in water was prepared by dissolving some glycerol in 500 g of water. This solution has a boiling point of 100.42°C while pure water boils at 100°C . What mass of glycerol was dissolved to make the solution?
- viii. A solution containing 30 g of non-volatile solute exactly in 90 g of water has a vapour pressure of 2.8 kPa at 298 K . Further 18 g of water is added to this solution. The new vapour pressure becomes 2.9 kPa at 298 K . Calculate
 - (i) the molecular mass of solute
 - (ii) vapour pressure of water at 298 K .
- ix. A 10% solution (by mass) of sucrose in water has freezing point of 269.15 K . Calculate the freezing point of 10% glucose in water, if freezing point of pure water is 273.15 K . Given: (Molar mass of sucrose = 342 g mol^{-1}) (Molar mass of glucose = 180 g mol^{-1})
- x. How many mL of a 0.1 M HCl solution are required to react completely with 1 g of a mixture of Na_2CO_3 and NaHCO_3 containing equimolar amounts of both? (Molar mass : $\text{Na}_2\text{CO}_3 = 106 \text{ g}$, $\text{NaHCO}_3 = 84 \text{ g}$)
- xi. Assuming complete dissociation, calculate the expected freezing point of a solution prepared by dissolving 6.00 g of Glauber's salt, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ in 0.100 kg of water. (K_f for water = $1.86 \text{ K kg mol}^{-1}$, Atomic masses: Na = 23 , S = 32 , O = 16 , H = 1)

Note: All the question a, b & c should be done in chemistry notebook.

BIOLOGY

Solve the given questions in fair Notebook.

- Q.1. What is the cross known as when the progeny of F1 and a homozygous recessive plant is crossed? State its advantage.
- Q.2. What are the criteria for selecting organisms to perform crosses to study the inheritance of a few traits?
- Q.3. The following pedigree shows a particular trait which is absent in the parents but found in the subsequent generation irrespective of the sexes. Analyze the pedigree and draw a conclusion.



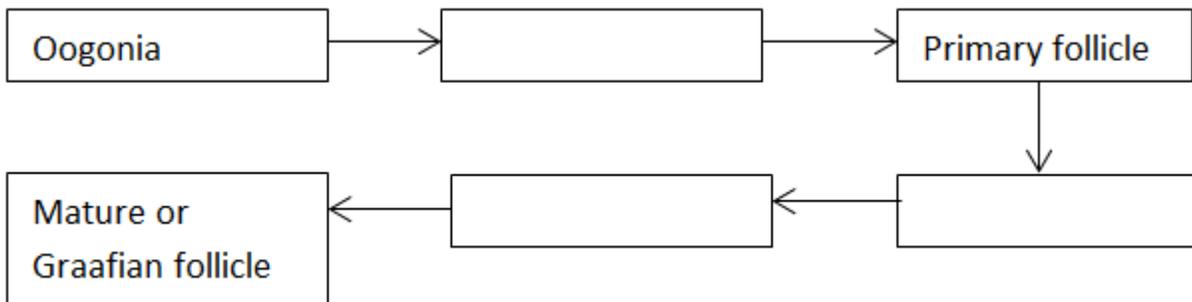
- Q.4. Why did Mendel self-pollinate the tall F1 plants to get the F2 generation and crossed a pure breeding tall plant with a pure breeding dwarf plant to obtain the F1 generation?
- Q.5. How are the alleles of a gene different from each other? What is its importance.
- Q.6. How far are the genes and environment responsible for the expression of a particular trait?
- Q.7. What is the genetic basis of the wrinkled phenotype of pea seed?
- Q.8. Why does an individual have only two alleles even if a character shows multiple allelism?
- Q.9. How is a mutation induced by the mutagen? Explain with examples.
- Q.10 Why is it that women exceeding 40 years of age have more chances of having a child with Down's syndrome?
- Q.12 A plant with yellow flowers was crossed with a plant with red flowers. The F1 progeny obtained had orange flowers. What is the inheritance pattern?
- Q.13 What is aneuploidy? Differentiate between aneuploidy and polyploidy.
- Q.14 . Describe the individuals with the following chromosomal abnormalities:

Trisomy at chromosome 21

XXY

XO

- Q.15. Fill in the missing boxes for the levels in the transformation of mother germ cells into a mature follicle.



- Q.16. What are the events that cause the chromosome number of gametes to go from $2n$, n , and again back to $2n$ during reproduction?
- Q.17. How is a primary oocyte different from a secondary oocyte?
- Q.18. State the role of the ampullary-isthmic junction in the female reproductive tract.
- Q.19. How is polyspermy checked by the zona pellucida of the ovum?
- Q.20 Explain the role of pituitary gonadotropins during the follicular and ovulatory phases of the menstrual cycle. Describe the shifts in steroidal secretions.
- Q.21 Explain in detail the difference between the meiotic division of oogenesis and spermatogenesis.
- Q.22. Explain in detail the various developmental stages of the zygote until implantation with suitable diagrams.
- Q.23. Explain the term polyembryony. How is it exploited commercially?
- Q.24. Is there any difference between apomixis and parthenocarpy? Explain the benefits of each.
- Q.25. The zygote divides only after the division of the primary endosperm cell. Give reasons in support of the statement.
- Q.26. Why is it that the generative cell of 2-celled pollen divides in a pollen tube and not of 3- celled pollen?
- Q.27. Label the following parts in the diagram given aside:
Male gametes, egg cell, polar nuclei, synergid, pollen tube.



PROJECT

Make a project on the reproductive health of Indian villages and cities. Also locate the various ART centres found in India. Mention various government and non govt organization working on it.

- Every alternate day an assignment will be shared from Khan academy. You all need to solve that assignment in the app only. The topics are as follow
Day 1 - Reproduction (Asexual)
Day 3 - Reproduction (Sexual)
Day 4 - Male Reproductive System and Female Reproductive System
Day 6 - Fertilization
Day 7- Mendelian laws
Day 9 - Chromosomal theory and disorders
Day 11 - DNA and its theories

Marks secured in the assignment will have weightage in Half Yearly Examinations.

PHYSICAL EDUCATION

Q .1. Create a file of any one specific game. (A4 Size white papers, Non-Plastic folder, Less decoration, more content)

(Game name –Volleyball , Football , Basketball, Kho Kho, Hockey, Kabaddi ,Cricket)

[Content- History, Rules, Playfield, Equipment, Important tournament, famous Venues, Famous personalities, Skills, terminology, Warming up, Common sports injuries, Awards, S.G.F.I]

Q 2 Create a file of yoga. (Explain any 5 Asana with procedure, benefits & contraindication). Perform all the five Asana daily and on final day ask your brother, sister or friend to record the same. While recording perform the asanas, explain the steps and benefits. Send the video on jitendra@hpskichha.com.

COMPUTER SCIENCE

Note: - Write the python code for all the questions and test your code in your computer through Python Shell or IDLE.

1. Write a method in python to display the elements of list thrice if it is a number and display the element terminated with '#' if it is not a number.

For example, if the content of the list is as follows:

```
List = [ '41', 'DROND', 'GIRIRAJ', '13', 'ZARA' ]
```

The output should be—

```
414141
```

```
DROND#
```

```
GIRIRAJ#
```

```
131313
```

```
ZARA#
```

2. Write a python program to have following functions:-

a) A function that takes a number as argument and calculate cube for it. The function does not return any value. If there is no value passed to the function in function call, the function should calculate cube of 2.

b) A function that takes two char arguments and returns True if both the arguments are equal otherwise False.

3. Write a python program to print the following pyramid:-

```
A
```

```
B B
```

```
C C C
```

```
D D D D
```

```
E E E E E
```

4. Write a program to input any number and to check whether given number is Armstrong or not? (An Armstrong number is a number such that if there are n number digits then the sum of its digits raised to the nth power is equal to the number itself. E.g., 371 is an Armstrong number, since $3^{**3} + 7^{**3} + 1^{**3} = 371$)

5. What will be the possible output(s) expected from the following code? Also specify maximum and minimum value—

```
def main ( ):
```

```
    p= "MY PROGRAM"
```

```
    i = 0
```

```
    while p[ i ] != 'R':
```

```
        l = random.randint (0, 3) + 5
```

```
        print ( p[ l ] , ' - '
```

```
        i = i + 1
```

i) R-P-O-R-

ii) P-O-R-Y-

iii) O-R-A-G-

iv) A-G-R-M-

6. Write a programs that reads a string and check whether it is a palindrome or not?

7. Write a program to find the median and mode of the given list, e.g., if the given list :

23, 9, 14, 2, 28, 19, 3, 15, 9, 25, 2, 4, 9

Then your code should print:

Median is: 9

Mode is: 9

Hint :- Median is the middle number and mode is the number that repeated more often then other numbers.

8. Write a script to print the following—

8

8 6

8 6 4

8 6 4 2

9. Program to print the following pattern:

```
#####
```

```
#       #
```

```
#       #
```

```
#       #
```

```
#       #
```

```
#       #
```

```
#####
```

10. Write a python code to input the list then print the sum of all the odd elements.