Sri Guru Harkrishan Public School,

Dugri Road Ludhiana

HOLIDAYS HOMEWORK

Relax

Explore

Learn

Have Fun

"Holidays are the perfect time to relax, explore, and grow.

Come back refreshed, recharged and ready to shine!"

Use this time to do what makes your soul happy and your future bright.

KEEP LEARNING, KEEP GROWING, KEEP SMILING!

SRI GURU HARKRISHAN PUBLIC SCHOOL, DUGRI ROAD, LUDHIANA

CLASS – XI -SCIENCE

CHEMISTRY

TASK-1

1.RESEARCH AND PROJECT:- Prepare a investigatory Project on **Emerging Technologies in chemistry** by choosing any one of the following topics:-

- Nanozymes - **Nanozymology**
- **Chemiluminescence**
- **VR enabled Modelling**

SUBMISSION:- (i) The project should be relevant and creative.
(ii) Use A4 size coloured / white sheets
(iii) Write only on one side of sheet.
(iv) Follow the Sequence :- (a)Acknowledgement
(b) Index
(c) Content
(d) Bibliography.

Learning Outcomes:- Learners will be able to draw conclusion how chemistry is use in our day-to- day life.
Learners will be able to takes initiative to know about discoveries, inventions and emerging techniques in Chemistry.

TASK-2

2. PORTFOLIO:- Prepare a Portfolio on a topic- Collect 15 Samples of medicinal drugs from nearest medical store or from your home. Write the salts present in them and also classify them on the basis of **Analgesics, Antibiotics, Transquillizers, Antiseptics and Antihistamines.**

SUBMISSION :- (i) The Portfolio report can be handwritten/ typewritten with pictures.
(ii) In case of typewritten, use fontsize 12.
(iii) Write only on one side of sheet.
(iv) Use A-4 size coloured/white sheets.

Learning Outcomes:- Learners will be able to recognize the salts that are present in medicinal drugs.
Learners will be able to relate the **Pharmaceutical chemistry** and **Organic Chemistry.**

TASK-3

3. WORKING MODEL:-

Roll numbers(1- 12) will prepare the following Model:

- **Design the 3-D working model of "Rutherford 's Model of an Atom"**

Reference:- https://youtu.be/j6HLfD7jgUU?si=sfyGUUrztYzri_-j

Roll numbers (13 onwards) will prepare the following Model.

- **Make a 3-D working model of " Bohr's Model of an atom" .**

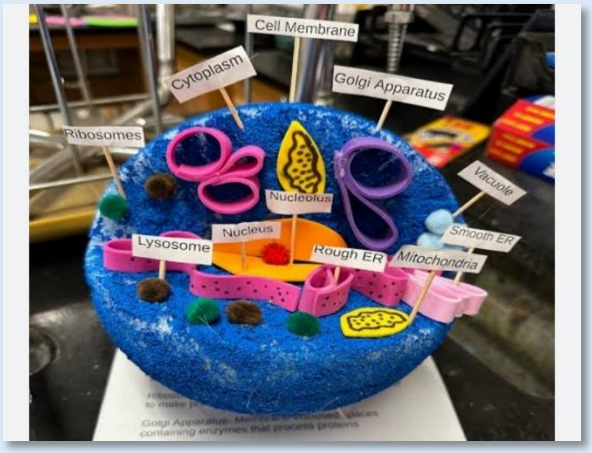
Reference:- https://youtu.be/WGnknHDmW0k?si=rO60DKfcxTUO2uEf.
"Students Kindly note model should be of appropriate size".
Learning Outcomes:- Learners will be able to demonstrates the motion of electrons around nucleus in circular orbits.

- **REVISE THE SYLLABUS TILL DONE AND SOLVE THE ASSIGNMENTS THAT ALREADY SHARED IN CLASS GROUP.**

Subject : Biology

Holiday homework stand out by combining hands-on creativity with core scientific concepts.By exploring topics like the local ecosystem, plant anatomy, or cellular structures, you can build knowledge that directly support your syllabus.

Roll no 1 (Divyam)
3D MICRO-WORLD: ANIMAL CELL MODEL .



Reference: Use household items like cardboard, clay, foam, and waste materials to craft the nucleus, mitochondria, Golgi apparatus, and cell wall. Paint each organelle a distinct color . For details attach small toothpick flags pointing to each organelle .

Roll no :2 (Gurleen) LEAF SKELETON ART

Leaf skeleton art uses the delicate vein structure of leaves to create decorative artwork. You can use different plant leaves or single type of leaves to make design. Art idea: Tree art

Roll no 3 (Kaushal)
<u>HERBARIUM PROJECT</u>: It is a collection of preserved plant specimens that are dried, mounted, labeled, and organized for study. It's a common biology/botany school project.

What to Include

1. **Cover Page**

Title: "Herbarium Project"
Your name
Class/roll number
School name
Submission date

2. **Introduction**

Write 1–2 paragraphs explaining , What a herbarium is ? , Why plants are collected and preserved , Importance in botany, medicine, agriculture, and environmental studies.

3. **Herbarium sheet consists:**
    - Botanical name
    - Family
    - Genus
    - Species
    - Locality

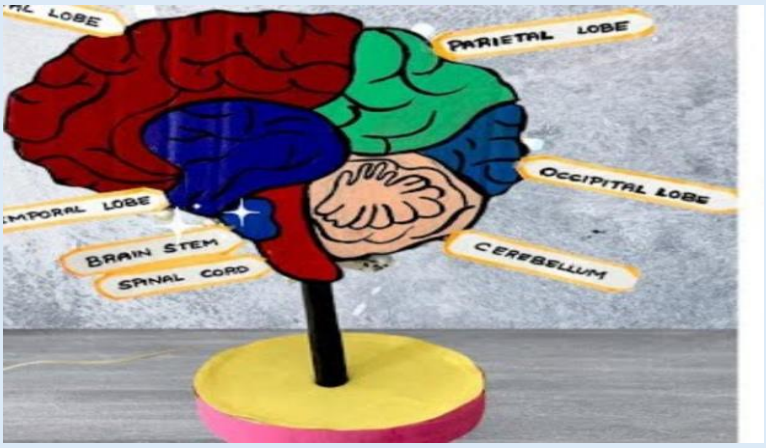
Write all these details right side at bottom.

Roll no 4 (Harman)
<u>MITOSIS SEQUENTIAL MODEL</u>
Create a step by step visual tracker of cell division (Mitosis) using large chart paper or 3D

model using clay or any material.

Reference: Draw each distinct phase Prophase, metaphase, anaphase and telophase, Focus heavily on chromosome alignment and pulling apart of sister chromatids. Label the spindle fibres , centrioles nuclear membrane and its changes at every step

Roll no. : 5 (Jashan)
HUMAN BRAIN

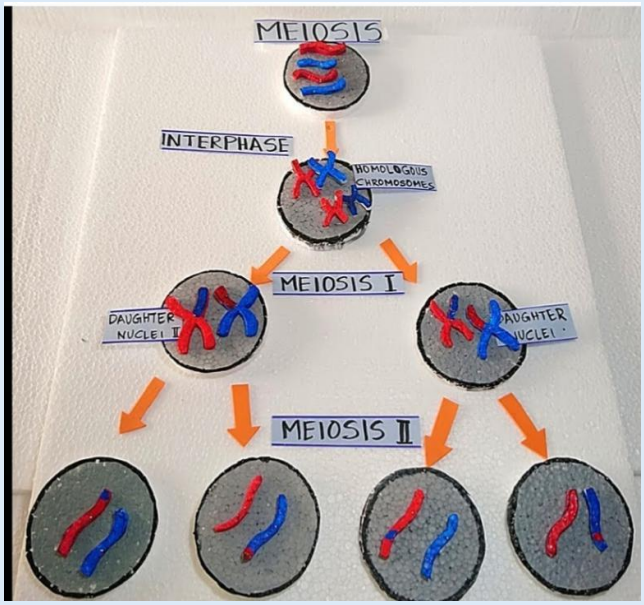


A simple 3D model of human brain can be made using clay, cardboard etc. Label the parts of the brain : cerebrum, cerebellum, brain stem.

Roll no 6 (Gurjot)
3D MODEL MICRO WORLD: PLANT CELL

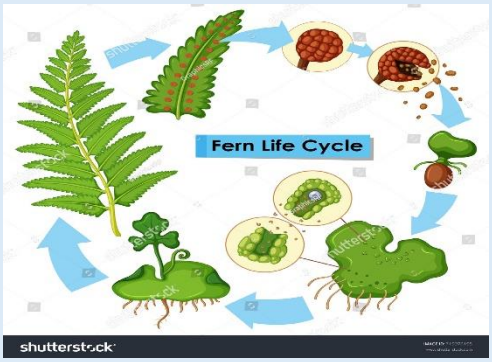
Reference: Use household items like cardboard, clay, foam, and waste materials to craft the nucleus, mitochondria, Golgi apparatus, and cell wall. Paint each organelle a distinct color. Details. Attach small toothpick flags pointing to each organelle.

Roll no: 7 (Muskan)
Meiosis I / II SEQUENTIAL MODEL



Make a 3D meiosis I, II using clay, cupboard showing 4 stages.: Prophase I /II, Metaphase I/II , Anaphase I / II, Telophase I/II and label them . Focus heavily on chromosome alignment and pulling apart of sister chromatids. Label the spindle fibres , centrioles nuclear membrane and its changes at every step.

Roll no. : 8 (Sharadpreet kaur)
VISUAL LIFE CYCLE CHART



Make a life cycle of ferns, *Funaria* (moss) , *Cycas* . Use colours, waste material, clay etc. yo highlight alternation of generation. (Sporophyte vs gametophyte phases) .

- **Compulsory for all**

Environmental day is celebrated on 5th june all over the world.

Plant a sapling a tree, you can give a name to your tree.
Make a poster on save mother earth

Physical Education Class +1

Grounds

1. Athletics [1 to 7 Pages]
2. Volleyball [1 to 7 Pages]
3. Basketball [1 to 7 Pages]
4. Kabaddi [1 to 7 Pages]
5. Any Choice [1 to 7 Pages]

Test

1. Sai Khelo India Fitness Test [1 to 7 Pages]
2. Procedure for Asanas, Benefits and Contraindication for any two Asanas for each lifestyle disease [1 to 7 Pages]

Music

1. Complete your project file.
2. Make a chart Alankar based on syllabus's Taals.
3. Draw Tanpura on A3 sheet and explain its part.
4. Make assignment related Chapter Natyashastra.

IT

Create a Microsoft PowerPoint presentation on cyber safety and

Security. The presentation should include: - 8-10 slides

- Relevant images - Animations

(English)- Core

Note: Do the following tasks in a separate Copy.
1)Read the poem "A Photograph" and identify

*Its theme (in 100 words)

*Rhyme Scheme

*Poetic Devices used

2)Identify the unfamiliar words from the chapters "The Portrait of Lady" and The Summer of the Beautiful White Horse (At least 15) and create a tabular log in your notebook featuring:

*The word

*Part of Speech

*Contextual Meaning

*An original sentence showcasing its usage.

3)Learn and use the following words in sentences:

Meticulous, Resilience, Empathy, Inevitable, Innovation, perseverance, articulate, diligent, versatile, integrity, compassion, optimistic, prudent, vivid, coherent, dynamic, authentic, humble, profound, adaptable.

PHYSICS

1. Physics Comic Strip

Create a comic story based on any topic:

Laws of Motion
Gravity
Work & Energy

📌 Use creativity, humor & characters.

📽️ 2. Short Video Project

Make a 2–3 minute video explaining:

Newton's Laws OR
Conservation of Energy

📌 Include real-life examples.

Home Physics Lab

Perform any ONE:
Make a simple electromagnet
Create a water clock
Make a balloon rocket

📌 Explain the physics principle behind it

Role Play Activity

Act as:
Isaac Newton
Galileo
Einstein

📌 Write a short script explaining their discovery

MATHEMATICS

This section consists of 10 questions of one mark each.

A1. Tick the correct answer:

1. For disjoint sets A and B, n(A) = 3, n(B) = 5, then n(A ∩ B) is
(a) 0 (b) 3 (c) 5 (d) 8

2. The set {– 2, 2} in the set builder form can be written as
(a) {–2, 2} (b) {x ∈ W : x ≤ 2}
(c) {x ∈ Z : x ≤ 2} (d) {x : x is a solution of $x^2 = 4$}

3. Let S = set of all points inside the square, T = the set of points inside the triangle and C = the set of points inside the circle. If the triangle and circle intersect each other and are contained in a square. Then
(a) S ∩ T ∩ C = ϕ (b) S ∪ T ∪ C = C (c) S ∪ T ∪ C = S (d) S ∪ T = S ∩ C

4. The number of proper subsets of a set containing n elements is
(a) 2^n (b) $2^n - 1$ (c) 2^{n-1} (d) n^n

5. Conjugate of complex number $i^3 - 4$ is
(a) $i^3 + 4$ (b) 4 – i (c) – 4 + i (d) – 4 – i

6. Find the magnitude of the following : 12i – 5
(a) 12 (b) 17 (c) 7 (d) 13

7. Two complex numbers $z_1 = c + id$ and $z_2 = e + if$ are equal if
(a) e = c (b) f = d (c) e = c and f = d (d) none of these

8. If $z_1 = a + ib$ and $z_2 = c + id$ are two complex numbers. Then the product z1z2 is defined as
(a) ac + bd (b) ac + i(bd) (c) (ac – bd) + i(ad + bc) (d) none of these

A2. Assertion and Reasoning: Choose the correct option in (Q9-10)from the following

a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true.

9. Assertion (A): The set A = {x : x is an even prime number greater than 2} is the empty set.
Reason (R): The set B = {x : $x^2 = 4$, x is odd} is not an empty set.

10. Assertion (A): If $\sqrt{a + ib} = x + iy$, then $\sqrt{a - ib} = x - iy$.
Reason (R): A complex number z is said to be purely imaginary, if Re(z) = 0

11. Two finite sets have *m* and *n* elements. The total number of subsets of the first set is 56 morethan the total number of subsets of the second set. Find the values of *m* and *n*.

12. If $z_1 = 2 + i$, $z_2 = 2 - 3i$, $z_3 = 4 + 5i$, evalua $\mathrm{Re}\left(\frac{z_1 . \overline{z_2}}{z_3}\right)$

13. Find the conjugate of $\frac{(3-2i)(2+3i)}{(1+2i)(2-i)}$

14. If U = {$x : x \leq 10, x \in N$}, A = {$x : x \in N, x$ is prime}, B = {$x : x \in N, x$ is even}, write A ∩ B′ in roster form.

15. If A = {x : x ∈ W, x < 2}, B = {x : x ∈ N, 1 < x < 5}, C = {3, 5} find (i) A × (B ∩ C) (ii) A × (B ∪ C)

16. If $\frac{(1+i)^2}{2-i}$ = x + iy, then find the value of x + y

17. Let A, B and C be three sets such that A ∪ B = A ∪ C and A ∩ B = A ∩ C. Show that B = C.

18.
(a) If $\frac{(1+i)^2}{2-i} = x + iy$, then find the value of $x + y$.
(b) If $\left(\frac{1+i}{1-i}\right)^3 - \left(\frac{1-i}{1+i}\right)^3 = x + iy$, then find (x, y).

19. Complex numbers are the numbers that are expressed in the form of a+ib where, a, b are real numbers and 'i' is an imaginary number called "iota". The value of i = (√-1). For example, 2 + 3i is a complex number, where 2 is a real number (Re) and 3i is an imaginary number (Im). An imaginary number is usually represented by 'i' or 'j', which is equal to √-1. Therefore, the square of the imaginary number gives a negative value. Since, i = √-1, so, $i^2 = -1$ The complex number is basically the combination of a real number and an imaginary number. The complex number is in the form of a + ib, where a = real number and ib = imaginary number. Also, a,b belongs to real numbers and i = √-1.
Hence, a complex number is a simple representation of addition of two numbers, i.e., real number and an imaginary number. One part of it is purely real and the other part is purely imaginary.
Based on the above information, answer the following questions.

(a) Express $\frac{3-i}{5+6i}$ in the form (a + ib). (2)

(b) Express $i^{15} - 3i^7 + 2i^{109} + i^{100} - i^{17} + 5i^3$ in the form (a + ib). (2)

Q20. Find the value of x, such that $\frac{3+2i\sin x}{1-2i\sin x}$ is purely imaginary.

Q21. If $\left(\frac{2-\sqrt{-9}}{1-\sqrt{-4}}\right) = (x+iy)$, find $(x+y)$.

Q22. In drilling world's deepest hole it was found that the temperature T in °C, x km below the earth's surface was given by $T = 30 + 25(x - 3)$, $3 \leq x \leq 15$. At what depth will the temperature be between 155°C and 205°C?

Q23. Find the equation of the curve formed by the set of all points which are equidistant from the points A(-1,2,3) and B(3,2,1)

Q24. How many liters of water will have to be added to 1125 liters of the 45% solution of acid so that the resulting mixture will contain more than 25% but less than 30% acid content?