DAV Public School, Kailash Hills HOLIDAY HOMEWORK (2025-26) CLASS XI-A (SCIENCE)

Dear children,

As you take a little break from school to spend time at home, do engage in various activities for your holistic development. Read books, explore new places/ museums and nurture your hobbies and interests while not losing touch with studies. Since you have taken your first step towards your future goals, do explore and collect information regarding your dream roles. The holiday homework has been designed to take care of your academic needs and to provide you opportunities to hone your creativity and critical learning skills.

We hope that you utilise and enjoy your holidays to the fullest and return back rejuvenated and in high spirits. Wishing you a happy, joyous and relaxing summer break with your family.

<u>ENGLISH</u>

LITERATURE

Practice assertion based questions. Do the case based and competency based questions given in the question bank in your English notebook for the following chapters.

- The Portrait of a Lady
- A Photograph
- We're not afraid to die....if We 're together
- The Voice of the Rain

WRITING SKILLS

Practice questions given in the question bank for the following topics :

- Poster
- Speech

BIOLOGY

A. Project Report:

Select a topic for your project and prepare a report on it. (Discuss your topic before preparing a report.)

The topic can be selected from any recent development in the field of Biology or any concept/phenomenon of Biology that you are interested in studying at a greater depth. (Eg.Lac culture, Makhana cultivation, Hydroponics, GM crop, Covid Vaccines, Bioplastics, any disease with a case study etc).

Points to be included in report :

- \Box Topic heading/cover sheet
- □ Index (List of Content)
- □ Introduction (Brief description of your topic and reason for selecting it)
- □ Background knowledge related to topic
- Detailed information (in a sequential manner)

If it is an investigatory project involving an experiment/data collection, then include the following: Aim, Materials required, Procedure, Observations, Result, and Precautions.

Or

Place/Institute visited, objective behind visit, people/Experts met, information collection (in form of interview/questionnaire), observations done (Photos supporting your descriptive account), analysis of data, conclusion drawn.

- □ A brief note on understanding developed through this project.
- □ Bibliography (Name of book (chapter), author of the book, specific WebPages referred)

Instructions :-

- 1. Use plain/ruled A4 size sheets for report writing.
- 2. Don't use sparkle pens or red/pink/green coloured pens.
- 3. Use pictures, drawings, graphs, concept maps to make your content catchy and interesting. Pictures pasted must be relevant and related to the topic.
- 4. Report has to be written by hand only.
- 5. Don't spiral bind your report before discussing it with me after vacations.

B. Revise the following chapters for PT1 and attempt the following questions in notebook:

- Ch- Living Kingdom
- Ch- Cell: Unit of Life
- Ch-Cell Cycle
- Ch- Morphology of Flowering Plants
- 1. Describe the biological nomenclature with the help of an example.
- 2. Define a taxon. Give some examples of taxa at different hierarchical levels.
- 3. Differentiate between the following:
 - (a) Racemose inflorescence and cymose inflorescence.
 - (b) Apocarpous and syncarpous ovary.
 - (c) Epipetalous and epiphyllous.
 - (d) Epigynous and hypogynous flower
- 4. Identify and explain the aestivation of the flower shown below in figure. Give an example.

5. The floral formula of *Solanum* flower is

 $\oplus \widetilde{Q^7} K_{(5)} \widetilde{C_{(5)}} A_5 \underline{G}_{(2)}$

a) How is the ovary placed on the thalamus of the flower with respect to calyx, corolla and androecium?

b) Is the flower apocarpous or syncarpous? Explain your answer.

6. Draw the ultrastructure of a eukaryotic cilia. Label it parts.

7. With the help of a diagram, represent the structure of the plasma membrane according to the fluid mosaic model.

8. What are mesosomes? Give their functions in prokaryotic cells.

9. a) Draw a labelled diagram of a chromosome (as seen in metaphase).

b) How do the chromosomes differ based on their centromere position?

10. a) Draw a labelled diagram of chloroplast.

b) How is it similar to mitochondria in structure and function?

11.a) Draw a diagrammatic view of the cell cycle indicating formation of two cells from one cell.

b) Give the details of major events in the interphase of the cell cycle.

- 12.In which phase of the meiosis are the following formed?
 - a) Synaptonemal complex
- c) Activation of enzyme recombinase
- b) Recombination nodule
- d) Terminalisation of chiasmata

e) Interkinesis

- f) Formation of dyad cells
- 13. Identify the mitotic and meiotic division stages depicted in the diagrams A, B and C. Give reason in support of your answer.



State the ploidy & number of chromosomes in daughter cells formed in A & B. 14. Differentiate between cytokinesis in plant and animal cells.

15. The C value for a cell at different stages of division for two cells is shown below. Read the table carefully and answer the questions that follow:

| Stage | Cell A | Cell B |
|---------------|--------|--------|
| G1 phase | 2C | 2C |
| S phase | 4C | 4C |
| G2 phase | 4C | 4C |
| Daughter cell | 2C | 1C |

- a. Which cell out of the two is undergoing meiosis. Give reason for your answer.
- b. Cell 'B' has 2n = 24, it enters the cell cycle. How many chromatins would be present at the G2 phase of this cell?
- c. Diagrammatically represent the cell cycle for the cell 'A'.

Or

c.Complete the table for a cell with 14 chromatin in the nucleus of its somatic cell :

| | Number of chromosomes at each pole of cell | Number of chromatids at each pole of cell |
|-------------|--|---|
| Anaphase I | | |
| Anaphase II | | |

C. <u>**Biodiversity Photography</u>**: Observe the flora and fauna around you (at home, garden/ parks, places you visit) and capture the pictures highlighting the morphological beauty or the peculiar behaviour of the plant, fungus or animal. Give a creative caption to the photograph and upload in the given link to be a part of Biodiversity photography presentation.</u>

https://forms.gle/Eb6JUqhpnPuHWJLV9

D.<u>Collection</u>: If you visit any place during summer vacations, try to collect some specimens/samples for your biology lab (example Pine cone/ Gymnosperm cone leaf, Fern leaf with spores, empty shells, some different flowers/seeds.) Preserve them properly so that they can be used as exhibits in Biology.

CHEMISTRY

Do complete notes : Ch-1.Some basic concept of chemistry Ch-2.Atomic structures Do complete NCERT exercise question answers.

Practice assertions based question and constancy based question, case study based questions.

COMPUTER SCIENCE :

1. Computer Overview:

- Research and Report: Choose a significant milestone in the history of computers (e.g., the invention of the transistor, the development of the internet, the rise of personal computers). Write a short report (around 200-300 words) detailing its impact on technology and society.
- Generations of Computers: Create a chart or table summarizing the five generations of computers, including their key technologies, characteristics, and examples.
- Components of a Computer: Draw a block diagram of a computer system, labeling its main components (CPU, memory, input devices, output devices). Briefly explain the function of each component.

2. Data Representation:

- Number System Conversions:
 - Convert the following decimal numbers to binary, octal, and hexadecimal:
 - **(45)10**
 - **(128)10**
 - **(255)10**
 - Convert the following binary numbers to decimal:
 - **(101101)2**
 - **(1110001)2**
 - Convert the following hexadecimal numbers to decimal and binary:
 - (3A)16
 - (C9)16
- Representing Text: Explain how characters (letters, numbers, symbols) are represented inside a computer. Research and briefly describe the ASCII and Unicode encoding schemes.
- Representing Images and Sound (Briefly): Briefly research and write a short paragraph on how images and sound are digitally represented. (No need for deep technical details, just a basic understanding).

3. Boolean Logic:

- Truth Tables: Draw the truth tables for the following Boolean expressions:
 - $\circ A \cdot B + C$
 - \circ (A+B) \cdot B
 - A⊕B (XOR)
- Boolean Algebra Laws: State and prove Demorgan's Law (using truth tables or algebraic manipulation)
- Logic Gates:
 - Draw the symbols and write the truth tables for the basic logic gates: AND, OR, NOT.
 - Draw the symbols and write the truth tables for the derived logic gates: NAND, NOR, XOR.
- Circuit Design (Simple): Draw a logic circuit diagram for the Boolean expression: X=(A+B)

ARTIFICIAL INTELLIGENCE

1. Practical on Supervised Learning

Open Google's Teachable Machine Choose the image project. Upload at least 10 images of 'Taj Mahal' in Class 1 and 10 images of 'Qutub Minar in Class 2. Train your model. Now test your model by uploading the image of Red Fort. What percentage of the Red Fort image matches Taj Mahal or Qutub Minar? What do you infer from this? https://teachablemachine.withgoogle.com

To learn how to use teachable machine watch the video: Teachable Machine By Google Train Your Model With Ease <u>Teachable Machine</u> <u>By Google-Train Your Model With Ease</u>

 Try out Thing Translator Go to <u>https://thing-translator.appspot.com/</u> The website requires camera access and see how Al identifies various objects, not just in English but in other languages like Spanish tool Do the activity based on AI Activity Worksheet Topic: Exploring Thing Translator – Object Identification and Translation Using AI

Activity Instructions:

- 1. Open the website: <u>https://thing-translator.appspot.com/</u>
- 2. Allow camera access when prompted.
- 3. Show different objects to the camera one by one.
- 4. Observe how the tool identifies each object and displays its name in English and another language (e.g., Spanish).

Answer the Following Questions:

- 1. What is the Thing Translator used for?
- 2. Write the names of three objects you tried and their translated names (if shown):

| Object (in front of camera) | Identified Name | Translated Name |
|-----------------------------|-----------------|-----------------|
|-----------------------------|-----------------|-----------------|

- 3. How do you think the tool identifies the object? (Hint: Think about AI and camera)
- 4. What did you learn from this activity about how AI can be used in real life?

MUSIC HOLIDAY HOMEWORK

Theory

1.नाद किसे कहते हैं,इसके भेद तथा लक्षण क्या क्या हैं ?

- 2. श्र्तियां किसे कहते हैं ,और यह कितनी हैं ?
- 3. स्वर क्या है, कितने हैं, श्रुतियों पर स्वर व्यवस्था कैसी की गयी है ?
- 4. सप्तक क्या है तथा कितने सप्तक मने गए हैं ?
- 5.थाट किसे कहते हैं और यह कितने मने गये हैं ?
- 6. राग किसे कहते हैं और राग के नियम क्या-क्या हैं ?
- 7.जाती,वादी-संवादी,वर्जित स्वर,आरोह-अवरोह ,पकड़ से आप क्या समझते हैं ?
- 8. ताल क्या है ?

9. कहरवा, दादरा, तीन ताल, और एक ताल को एकगुण,दोगुन,चोगुण में लिखने का अभ्यास करें !

क्रियात्मक अभ्यास (PRACTICAL PRACTICE)

10. छात्र c/c# scale से सरगम गाने का अभ्यास करें तथा छात्राएँ G#/A# scale से सरगम गाने का अभ्यास करें 11, स्वर को सही करने के लिए तानपुरे के साथ गाए और swar meter app पर अपने सुर को सही करें ! अगर तब भी स्वर सही नहीं हो रहा है तो हारमोनियम (manual or app) के साथ एक-एक स्वर पर 2-2 मिनट रुक-रुक कर अभ्यास करें

12. अलग- अलग शास्त्रीय गायकों के द्वारा गाए गए राग बिहाग और भैरवी को अच्छे से सुने । यहाँ मैं निचे कुछ यूट्यूब के link आपसे साझा कर रहा हूँ

https://youtu.be/yE-FwnrbgDA?si=Gzj-93A0dVvxA3Ia

राग बिहाग आलाप और तान के साथ

https://youtu.be/4NRk6pr31oc?si=IQ-dxFlZq0iJpeeN

ईस link में राग भैरवी की स्वरलिपि गायी गई है,

https://youtu.be/d5j_1Tsl9nI?si=J23Sh34P_hEpSF4W

इस link में राग बिहाग की स्वरलिपि गाई गई है, जिसे सुन-सुनकर अच्छे से याद करें एवं लिखने का अभ्यास करें

13. अब मैं निचे ताल कहरवा,तीन ताल ,दादरा ताल के link आपसे साझा कर रहा हूँ, इसे आप अच्छे से सुन-सुनकर, ताली देकर, वीडियो के साथ -साथ याद करें

<u>https://youtu.be/K-WB-g4_yEk</u> तीन ताल की ताली

<u>https://youtu.be/kD1a5PB0gYU</u> एक ताल की ताली

<u>https://youtu.be/X7MpxDeyy44?si=M0-45sp-Kv3rvvci</u>ताल कहरवा की <u>https://youtu.be/8M7OsQSKrRE?si=RG13LGSurzfAGIYnताल</u> दादरा की ताली

PAINTING

THEORY

Q1) On the basis of style, technique and time periods, the rock art of Bhimbetka has been classified into how many groups? Explain.

Q2) Write short note on :

A) Dancing Girl(Mohen-jo- daro)

- B) Seal (Unicorn Bull)
- C) Lion Capital (Sarnath)
- D) Padmapani Bodhisattva

(Written work to be done in copy)

Practical

Painting composition -

1) Free hand basic design assignment (size of the box 12 X 16 inches)

2) Free hand basic design assignment (size of the box 12 X 14 inches)

3) Geometrical design (pdf of samples shared in group)

Still life -

Work -2

(reference images I will share in class group)

MATHEMATICS

- 1. Finish your classwork & NCERT exercises & Solve the following additional questions:
 - a. Describe in roster form: $\{x: x \in Z \text{ and } |x| \le 2\}$.
 - b. Write the set $A = \{x: x \text{ is a prime divisor of } 60\}$ in roaster form.
 - c. What is the no. of relations defined from A to B if $A=\{1,2,3\}$ and $B=\{a,b\}$. Justify your answerWhat is the no. of relations defined from A to B if $A=\{1,2,3\}$ and $B=\{a,b\}$. Justify your answer.
 - d. In a joint family of 15 persons, 9 take coffee, 8 take milk and 2 take neither. How many members take both coffee and milk?
 - e. **(VBQ)** In a cleanliness drive,out of 25 students of class XI, it is found that 15 students help cleaning the classrooms, 12 students help cleaning the black boards, 11 had taken responsibility to look after the corridors' cleanliness, 5 had taken responsibility of both class rooms and corridors, 9 had taken for both classrooms and black boards, 4 had taken for both blackboard and corridors and 3 had taken all the three responsibilities. Find the number of students who have:
 - i. taken at least one responsibility
 - ii. taken exactly one responsibility
 - iii. none of the responsibilities
 - iv. Suggest any two methods by which you can keep your surroundings clean?
 - f. Determine the domain and the range of the relation R defined by $R = \{ (x, x + 5) : x \in \{0, 1, 2, 3, 4, 5\} \}$
 - g. Let A={x,y,z} and B={1,2}. Find the number of relations from set A to set B.

- h. $R = \{(x, y): 3x y = 0, where x, y \in A\}$. Write R in roster form. Also write its domain, codomain and range.
- i. Find the value of : $\tan 15^{\circ}$
- 2. Finish the practical file for all the activities done in class

PHYSICS

Q1. A physical quantity P depends on four observables a, b, c and d as per the relation:

 $P=a3b2cdP = \frac{a^3 b^2}{c d} P=cda3b2$

If the percentage errors in the measurements of a, b, c and d are w%, x%, y% and z%, respectively, obtain the formula for the percentage error in the quantity P.

Q2 (a) A body is moving along a straight line with a uniform negative acceleration. Draw the shape of its displacement vs time graph.(b) The displacement of a body is given to be proportional to the cube of time elapsed. How does the acceleration of this body change with time?

Q3. A projectile of mass 50 g is projected with a velocity of 10 m/s from the ground at an angle of 45° with the horizontal. Find the magnitude of the **change** in its momentum between 'leaving' and 'arriving back' to the ground.

OR

Show that a given gun will shoot **three times as high** when elevated at an angle of 60° as compared with firing at an angle of 30° .

Q4. Write the name of the SI unit of 'luminous intensity'.

Q5. The escape velocity 'v' of a body depends upon (i) the acceleration due to gravity (g) of the planet and (ii) the radius (R) of the planet. Use the **method of dimensions** to obtain a relation between v, g and R.

Q6. A body is initially at rest. It undergoes one-dimensional motion with a constant acceleration. How does its displacement (s) depend on time (t)?

Q7 (ii). Instantaneous speed of an object always equals the magnitude of its instantaneous velocity — Say "yes" or "no".

Q8. A ball, initially at rest, is released from the top of a tower of height 27 metres. It takes 'T' seconds to reach the ground. Find the height of the ball, above the ground, at t = T/3.

Q9. Draw the following graphs for the motion of an object (initially at rest) under 'free fall'. Neglect air resistance.

(i) Variation of position with respect to time

(ii) Variation of velocity with respect to time

(iii) Variation of acceleration with respect to time

Q10. Average speed of an object always equals the magnitude of its average velocity — Say "yes" or "no".Justify.

Q11. A projectile is thrown upward at an angle θ with the horizontal, with an initial velocity u. Obtain the equation of its **trajectory** and state its nature.

Q12. Ravi was very interested in athletics, specially in Javelin throw. He used to watch it on television and imagined himself playing the same. His friends encouraged him to do practice in the fields instead of just dreaming. He started practising daily but his range of throwing didn't increase much. He then approached his PTI who patiently listened to his problem. He advised Ravi that he should aim to throw the javelin at an angle of 45° with the horizontal. Ravi did the same and his range of throw started improving day by day. He soon started participating in competitions.

(i) State the values shown by Ravi and his PTI.

(ii). Why did the PTI advise Ravi to throw the javelin at an angle of 45° with the horizontal direction?

Q13.

Derive formula for magnitude of the resultant \overrightarrow{R} of two vectors \overrightarrow{P} and \overrightarrow{Q} using parellelogram law of addition of vectors.

OR

Draw the velocity-time graph for a uniformly accelerated motion. Use the graph to obtain a relation between the initial velocity (u), the final velocity (v), displacement (s) and acceleration (a). (2)

Q14.

A body is projected with a speed 'u' at an angle of projection ' θ ' with the horizontal. Obtain the equation for the trajectory of its motion. States its nature.

From the equation obtained deduce the expression for horizontal range (R).

OR

A particle is executing uniform horizontal circular motion with a speed 'v' along a circular path of radius 'r'.

- (i) Why do we regard the particle as having an accelerated motion, even though its speed is constant ?
- (ii) Obtain the expression for this acceleration.
- (iii) Write this expression in vector form.
- (iv) Show that this acceleration is centripetal in nature. (5)

Q15.

State the number of significant figures in the following measure quantities :

- (i) 0.004700 km
- (ii) 12300 cm

Q16.

Name the physical quantity, corresponding to the slope of the position-time graph at a particular instant. State whether this quantity is a scalar or a vector.

Q17.

Suggest a suitable physical situation for the velocity-time graph given below :



Q18.

Three point objects, A, B and C, are projected at angles of projections, θ_1, θ_2 and θ_3 , respectively, as shown in the figure.



If all of them attain the same maximum height, show that their 'times of flight'are also identical.

OR

A particle, initially moving with a velocity \vec{u} , along the x-axis, experiences a uniform acceleration, \vec{a} , in a direction inclined at an angle θ to the x-axis, for a time *t*.

Obtain an expression for the magnitude, v, of the final velocity $\left(\overrightarrow{v} \right)$ of the particle.



Q19.

The power developed, when a force of $\vec{\mathbf{F}} = (\hat{i} + 2\hat{j} - \hat{k})$ N, acting on a body, producing a velocity of $\vec{\mathbf{v}} = (-\hat{i} + \hat{j} - a\hat{k}) ms^{-1}$ in it, is found to be 3 watt. Find the value of a.

Q20

The speed-time graph for a particle, moving along a straight line, is shown in the figure.

Find out the average speed of the particle between the time intervals :

(i) t = 0 and t = 10 s

(ii) t = 2 s and t = 6 s



Q21.

A constant force, \overrightarrow{F} , acting on a body of mass 20 kg, changes its velocity from $(2\hat{i})_{ms^{-1}}$ to $(6\hat{i})_{ms^{-1}}$ in 40s. Find the magnitude and direction of the force.

Q22.

(a) Two particles P and Q move vertically under gravity the graphs, in the figure* show the upward velocity V (in m/s of the particles at time t (in s) for 0 ≤ t ≤ 4. P starts with velocity V (in m/s) and Q starts from rest. Taking g ≈ 10 ms⁻², find the value of v.



(b) Given that Q reaches the ground, when t = 4s. Find the speed with which Q reaches the ground and its height above the ground, at t = 0.

Q23.

A fighter plane, flying horizontally at an altitude (H) metre, with a speed v (ms⁻¹), passes directly overhead an anti aircraft gun. At what angle from the vertical should the gun be fired so that the shell fired with a muzzle speed (U)ms⁻¹, hits the plane ? At what minimum altitude should the pilot fly the plane to avoid being hit ?

Q24.

- (a) State the triangle law of vector addition.
- (b) Two vectors \overrightarrow{A} and \overrightarrow{B} are inclined to each other at an angle Q. Using triangle law of vector addition, find the magnitude of their resultant.

Happy Holidays.....