GURUKUL INTERNATIONAL SCHOOL, Haldwani

HOME WORK FOR SUMMER BREAK (2026-27)

Class- XI Science

ENGLISH

READING & REFLECTION

1 Read any ONE age-appropriate novel of your choice during the holidays and answer the following questions.

A. Book Information
- Name of the book
- Author's name
- Genre/theme
- Favourite character

B. Story Snapshot

Write a summary of the story in **120–150 words**.

C. Character Reflection

Describe one character you admired most and explain why.

D. Personal Reflection

a) What lesson did you learn from the novel?
b) ow did the story influence your thinking?

COMMUNICATION & SPEAKING SKILLS

2 **Interview an Elder**

Interview your grandparents or any elderly person in your family or neighbourhood.

ASK THE FOLLOWING QUESTIONS:

i) How was school life different earlier?
ii) What values were considered important during your time?
iii) How did people communicate without mobile phones and social media?

Write the interview in **Question–Answer format**.

INSTRUCTIONS:
- Ask at least 5–6 questions.
- Observe the person's experiences.
- Write neatly and respectfully.

CREATIVE & IMAGINATIVE THINKING

3 **Time Travel Diary**

Imagine you travelled 100 years into the future.

TASK:

Write a diary entry describing:
- Technology
- Schools
- Environment
- Transportation
- Human relationships

WORD LIMIT:

120 words

INSTRUCTIONS:
- Use a diary format.
- Be imaginative and creative.
- Mention the date and day.

DIGITAL & MEDIA LITERACY

4 **Fake News Detective**

Today's digital world requires students to think critically before believing online information.

TASK:

Find one fake or misleading online news example.

WRITE:
- Why did it look real?
- How did you check whether it was true or false?
- What lesson did you learn from it?

Create **5 rules for safe and responsible internet use**.

PRESENTATION:

You may present the rules in the form of:
- Poster
- Chart

- Mind map
- Slogan writing

PROBLEM SOLVING & ENVIRONMENTAL RESPONSIBILITY

5 **Problem-Solving Challenge**

Your school wants to reduce plastic waste.

SUGGEST:

- 5 practical solutions
- Awareness ideas for students
- Responsibilities students should follow

HINTS:

You may include:

- Cloth bags
- Reusable bottles
- Recycling
- Cleanliness drives
- Awareness campaigns

WORD LIMIT:

120–150 words

POETRY WRITING

6 **Poetry Writing Activity**

Poetry helps express emotions, imagination, and creativity.

TASK:

Write a short poem on ANY ONE of the following topics:

- Rain
- Hope
- Nature
- Friendship
- Silence
- Dreams

INSTRUCTIONS:

- Write **8–12 lines**
- Use simple and meaningful language
- Add a suitable title
- Decorate with drawings if desired

COMMUNITY OBSERVATION

7 **Community Observation Activity**

Observe any ONE public place:

- Market
- Railway station
- Park
- Hospital

WRITE ABOUT:

- People's behaviour
- Communication styles
- Problems noticed
- Suggestions for improvement

WORD LIMIT:

120–150 words

INSTRUCTIONS:

- Observe respectfully and carefully.
- Focus on real-life communication and behaviour.
- You may add sketches or photographs.

FINAL SELF-CHECK BEFORE SUBMISSION ✓

Checklist

I completed all tasks neatly
I followed the word limits
I used original ideas
I checked grammar and spelling
I presented the work creatively

PHYSICS

1 Which of the following pairs doesn't have the same dimensions?
a) Torque and work b) Angular Momentum and Plank constant
c) Stress and Young's modulus d) Surface tension and force

2 If force F, velocity V and time T are considered as fundamental physical quantities, then dimensional formula of density will be:
a) $FV^{-2}T^{2}$ b) $FV^{-4}T^{-2}$ c) $FV^{4}T^{-6}$ d) $F^{2}V^{-2}T^{6}$

3 The air bubble formed by explosion inside water perform oscillations with time period T which depends on pressure (p), density (ρ) and on energy due to explosion (E). Establish relation between T, p, E and ρ.

4 The velocity v of a particle depends upon the time 't' according to the equation

$$v = \sqrt{ab} + bt + \frac{c}{d+t}$$

Determine the units of a, b, c and d. What physical quantities they represent. All have SI units.

5 Write three the limitations of dimensions analysis.

6 Find the significant figures of the following digits:
a) 2.3050 b) 0.007890 c) 123400 d) 3.246×10^{7} e) 308.00

7 The velocity of a particle at an instant is 10m/s. After 3 s its velocity will become 16m/s. The velocity at 2s before the given instant will be
a) 6m/s b) 4m/s c) 2m/s d) 1m/s

8 A stone falls freely such that the distance covered by it in the last second of its motion is equal to the distance covered by it in the first 5seconds. It remained in air for:
a) 12s b) 13s c) 25s d) 26s

9 A car starting from rest, accelerates at a rate fthrough a distance S , then continues at constant speed for time t and then decelerates at the rate f/2to come to rest. If the total distance traversed is 5S, then prove that $S= ft^{2}/2$

10 The relation between time t and distance x is $t= ax^{3} + bx$ where a and b are constants. Find the instantaneous acceleration.

11 a) Can a body have a constant speed but varying velocity?
b) A ball is thrown straight up. What is its velocity and acceleration at the top?
c) Two balls of different masses (one lighter and heavier) are thrown vertically upwards with same initial speed. Which one will rise to the greater height?
d) Can a body have zero velocity and finite acceleration? Justify your answer with an example.

12 A ball thrown up is caught by the thrower after 4s. How high did it go and with what velocity was it thrown? How far was it below the highest point 3s after it was thrown?

Assertion and Reason

In the following questions, a statement of assertion A is followed by a statement of reason R. Mark the correct choice as:
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true and reason is not the correct explanation of assertion
c) If assertion is true and reason is false
d) If both assertion and reason are false

13 Assertion: For a given time interval average velocity is single valued while average speed can have many values.
Reason: Velocity is a vector quantity and speed is a scalar quantity

14 Assertion: The speedometer of an automobile measures the average speed of the automobile.
Reason: Average velocity is equal to total distance divided by total time taken.

15 ACTIVITY
Determining height of your house.
Drop a stone from the roof of your house three times. Note the timings using stopwatch. Calculate the average value of time. Calculate the height using equations of motion and compare it with actual height.

CASE BASED STUDY

16 A physics student was standing on the roof of his school building. He has three balls having masses M1(1kg), M2(2kg) and M3(3kg). In the absence of air resistance all balls fall with the same acceleration near the surface of the earth which is equal to acceleration due to gravity. This motion is known as free fall. When he released the balls some questions arises in his mind. Answers to these questions will make his concepts strong and firm which will boost his confidence. The questions are:

i) When all the three balls are released from the roof the speeds of the balls on reaching the ground will be in the ration of
a) M1: M2: M3 b) M1: 2M2: 3M3 c) 1/M1 : 1/M2 : 1/M3 d) 1:1:1

ii) A body is falling from rest describes distances S1, S2 and S3 in the first, second and third seconds of its fall, the the ratioS1: S2: S3 is
a) 1:1:1 b) 1:3:5 c) 1:2:3 d) 1:4:9

iii) A body is projected upwards with a certain speed from the top of a tower reaches the ground in t1. If it is

projected vertically downwards from the same point with the same speed, it reaches ground in t_2. Time required to reach the ground, if it is dropped from the top of the tower is

a) $\sqrt{(t_1t_2)}$ b) $\sqrt{(t_1-t_2)}$ c) $\sqrt{(t_1/t_2)}$ d) $\sqrt{(t_1+t_2)}$

CHEMISTRY

1 The emission spectrum of hydrogen consists of several series such as Lyman and Balmer; explain the origin of these series using Bohr's model and predict which transition corresponds to the shortest wavelength.

2 Calculate the energy of an electron in the second orbit of hydrogen and determine whether energy is absorbed or emitted when it moves to the first orbit

3 Explain why Heisenberg's uncertainty principle rules out the concept of definite paths or orbits for electrons in an atom, and discuss its implication on Bohr's model.

4 Calculate the maximum number of electrons possible in a shell with principal quantum number n = 4 and explain how quantum numbers restrict electron distribution.

5 Explain the difference between radial and angular nodes and calculate the number of each for a 3p orbital.

6 **CASE BASED QUESTIONS**

A scientist observes discrete spectral lines in hydrogen instead of a continuous spectrum and explains this phenomenon using quantized energy levels where electrons transition between fixed orbits emitting radiation of specific wavelengths.

a) Why does hydrogen show line spectrum instead of continuous spectrum?
b) Which transition gives maximum energy emission?
c) What happens to wavelength as electron moves to higher orbits?
d) Identify the series when electron falls to n = 1.

MATHEMATICS

1 Given sets A = {1, 2, 3, 4}, B = {3, 4, 5, 6}, and C = {5, 6, 7, 8}, find

i) $A \cup B$
ii) $A \cap B$
iii) $A - B$
iv) $B - A$
v) $(A \cup B) \cap C$

2 **Venn Diagrams**

Draw Venn diagrams to represent the following

i) $A \cup B$
ii) $A \cap B$
iii) $A - B$

3 Given a relation R = {(1, 2), (2, 3), (3, 4), (4, 5)}, find

i) Domain of R
ii) Range of R
iii) Inverse of R

4 Given a function $f(x) = x^2 + 1$, find

i) $f(2)$
ii) $f(-3)$
iii) $f(x + h)$

5 Prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

6 If A = {1, 2, 3} and B = {3, 4, 5}, find $(A \cup B)'$ and $(A \cap B)'$

7 Make a project on set theory and its types. Give suitable examples also.

BIOLOGY

1 Read the following case study and answer the given case based questions in your Biology notebook.

Case study:

Patient suffering from chronic liver disease starts showing symptoms such as confusion, irritability, and poor concentration. Doctors explain that a toxic substance produced during protein metabolism is not being converted efficiently into a safer compound. As a result, toxic materials begin affecting the nervous system

Case based questions:

1. Identify the toxic substance accumulating in the body.
2. Which metabolic process normally converts this substance into a safer form?
3. Explain why the toxic substance affects brain function.
4. How are the liver and kidneys functionally connected in excretion?
5. Why might doctors recommend a controlled protein diet?
6. Predict what may happen if the toxic substance continues accumulating

2 **DIY Biology experiment**

Task : Perform one home based experiment and write following in your lab manual :

- Aim
- Materials

- Procedure
- Observation
- Conclusion
- Photos

Choose any one :

1. Osmosis using raisins/potato
2. Effect of light on plant growth
3. Seed germination study
4. Pulse rate before and after exercise

3 **Biology in Daily Life" Scrapbook**

Task : Collect newspaper/magazine articles related to following topics :

- health,
- environment,
- biotechnology,
- diseases,
- nutrition,
- climate change.
- Discoveries related to biology.

Paste minimum 20 articles in well organized manner in a scrapbook and write:

- 3-line summary.
- Your opinion about the topic.
- Biological concept involved.

4 **Human Body Facts and Physiology**:

- Task: Choose a specific organ system in the human body (e.g., digestive, respiratory, circulatory) and delve deeper into its structure and function.
- Activities:
- Research the different organs involved and their specific roles.
- Explain the physiological processes that occur within the system.
- Present your findings through diagrams, flowcharts in a chart .

PHYSICAL EDUCATION

1 My Fitness Blueprint

Prepare your personal fitness blueprint for one month. Include:
Fitness goals
Daily workout routine
Diet habits
Sleep routine
Motivation techniques
Write how this plan can improve your physical and mental health.

2 Sports Journalism Task

Imagine you are a sports journalist covering an international tournament. Write a short report on:
Match highlights
Best player performance
Crowd reaction
Lessons learned from the game

3 Brain & Body Connection

Perform any physical activity for 20 minutes daily for one week. Observe changes in:
Mood
Energy level
Concentration
Sleep quality
Write your experience in about 100 words.

4 Critical Thinking

"Social media motivates fitness but also creates unhealthy body pressure." Express your views with suitable examples.

5 Sports Leadership Activity

As a Sports Prefect, prepare five innovative ideas to increase participation of students in sports activities at school.

6 Research Activity

Compare any two famous sports personalities on the basis of:
Discipline
Fitness routine
Achievements

Leadership qualities
Contribution to society
Paste pictures and present your comparison creatively.

7 Skill Enhancement Task
Choose any one sport and explain:
Basic skills required
Common mistakes beginners make
Ways to improve performance
Safety precautions

8 Creative Expression
Create a motivational fitness magazine cover with:
Title of the magazine
Fitness quotes
Healthy habits tips
Sports icons/drawings

9 Case-Based Learning
A school plans to reduce sports periods for extra academic classes.
Answer the following:
Do you think this decision is right? Why/Why not?
What can be the effects on students' health?
Suggest a balanced solution for both academics and sports.

10 Activity-Based Project
Prepare a mini project on any one topic:
Women Empowerment through Sports
Paralympics and Inspiration
Nutrition for Athletes
Fitness Trends Among Teenagers
Importance of Physical Activities in Daily Life
Include pictures, facts, and your personal opinion.

11 Bonus Fun Task
Create your own:
Fitness mantra
School sports logo
Team jersey design
Sports event tagline

HINDI

1 रचनात्मक लेखन
क) 'लोकतंत्र में मीडिया की भूमिका' पर रचनात्मक लेख (लगभग 100–150 शब्द) लिखें।
ख) 'साइबर अपराधः कारण और निराकरण' विषय पर एक रिपोर्ट तैयार करें।
ग) पर्यावरण संरक्षण पर स्वरचित कविता या लघु कहानी लिखें।

2 परियोजना कार्य
क) उत्तराखण्ड के त्योहर और संस्कृति पर परियोजना कार्य निम्नलिखित बिन्दुओं के आधार पर बनाइए।
1 परिचय 2 उत्तराखण्ड के प्रमुख त्योहर 3 त्योहारों का सामाजिक एवं सांस्कृतिक महत्व 4 निष्कर्ष

3 जनसंचार माध्यम– समाचार पत्रों से खेल, राजनीति और अपराध की प्रमुख खबरों की कतरनें इकट्ठा करके एक फाइल बनाएँ।

COMPUTER

Python Programming Skills/ Analytical Skill

1 Write a program to calculate area of circle and shaping two numbers.
2 Differentiate between decimal and binary number systems.
3 Explain hexadecimal number system with example.
4 Convert the following:
i) $(45)_{10}$ to binary ii) $(101101)_2$ to decimal iii) $(72)_8$ to decimal iv) $(2F)_{16}$ to decimal
5 Write the steps for converting decimal numbers into binary numbers.
6 Explain the importance of number systems in computers.
7 Why do computers use binary language instead of decimal language?

Cyber Safety Activity

8 Design a poster on Cyber Safety or Strong Passwords.
9 Write short notes on Artificial Intelligence and IoT.

Creative Thinking

10 Write an essay on 'Future Classrooms with AI'.
11 Explain how computers help in daily life.

12 What is the output of the following expressions?

- 1 AND 0
- 1 OR 0
- NOT 1
- (1 AND 1) OR 0

Mini Project

13 Create a Calculator or Quiz Game using Python.

Teacher's Note:

"Technology helps us think creatively and solve real-life problems effectively."

PSYCHOLOGY

1 **Sensory Book Activity**

Students have to create a **Sensory Book** of minimum **10 pages** based on the five senses and psychological perception.

Each page should include:

• Name of the sense
• Real-life examples
• Small activity or illusion
• Pictures or creative materials
• One psychological fact related to the sense

Suggested Page Ideas:

1. Cover Page – My Sensory Psychology Book
2. Sight (Visual Illusions)
3. Hearing and Sound
4. Smell and Memory
5. Taste and Emotions
6. Touch and Texture
7. Brain and Sensory Processing
8. Optical Illusions
9. Emotions and Senses
10. Fun Facts about Human Behaviour

Creative Additions:

• Use cotton, fabric, sandpaper, leaves, ribbons etc.
• Add foldables, pop-ups, or textured materials.
• Decorate creatively using charts and colours.

2 **Case Study Activity (5 Marks)**

Topic: "Impact of Mobile Phones on Teenagers' Behaviour and Mental Health"

Interview at least **3 teenagers** and collect information about:

• Screen time
• Sleep habits
• Mood changes
• Attention span
• Social interaction

Format:

1. Introduction
2. Questions Asked
3. Responses Collected
4. Psychological Analysis
5. Conclusion
6. Suggestions

Word Limit: 400–500 words

3 **Self-Observation Journal (5 Marks)**

Maintain a **5-day self-observation diary**.

Include:

• Daily emotions
• Situations affecting mood
• Reactions and behaviour
• One positive learning each day

Day	Emotion Felt	Reason	How You Managed It