NORTH-EX PUBLIC SCHOOL
(Senior Secondary, Affiliated To CBSE)
School Block, Jain Nagar, Sector-38, Rohini, Delhi – 81
SUMMER HOLIDAY HOMEWORK, 2025-26
CLASS – XI (SCIENCE)

PHYSICS

1. A new unit of length is chosen such that the speed of light in vacuum is unity. What is the distance between the sun and the earth in terms of the new unit if light takes 8 min and 20 s to cover this distance?
2. State the principle of homogeneity of dimensions. Test the dimensional homogeneity of the following equation:
   $h = h_0 + v_0t + \frac{1}{2}gt^2$.
3. Write the three applications of principle of homogeneity with examples.
4. The position x of a particle varies with time t as $x = at^2 - bt^3$. Find the time when acceleration will be zero.
5. A ball is thrown vertically upward. It has a speed of 10 m/s when it has reached one half of its maximum height. How high does the ball rise? Take g = 10 m/s^2.
6. A stone released with zero velocity from top of the tower reaches the ground in 4 s. Find the height of the tower.
7. Derive the equation $v^2 – u^2 = 2as$, graphically.
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 5 seconds. Find the time for which it remained in air.
9. Complete practical and activity files.
10. Make an investigatory project with working model.

S No	Roll numbers	Suggested Investigatory projects
1	7,11,26,31	Pascals Law
2	8,12,27,32	Bernoulli's Theorem
3	9,13,28,33	Surface Tension
4	10,14,29,34	Friction
5	1,15,30,35	Elasticity
6	2,16,21	Thermal radiation
7	3,17,22	Gravitation
8	4,18,23	Oscillation
9	5,19,24	Waves
10	6,20,25	Laws of motion

MATHEMATICS

1. Solve the inequality $\frac{(2x-1)}{3} \geq \frac{(3x-2)}{4} - \frac{(2-x)}{5}$ for real x.
2. Express the complex number $\left(\frac{1}{3} + 3i\right)^3$ in the form of $a + ib$.
3. If U={1,2,3,4,5,6,7,8,9} A={2,4,6,8} B={2,3,5,7}, verify that i) $(A \cup B)' = A' \cap B'$

ii) $(A \cap B)' = A' \cup B'$

4. If A and B are two given sets , then represent the set using venn diagram (A-B)' and (A ∩ B)'
5. write the set $\left\{\frac{1}{3}, \frac{3}{5}, \frac{5}{7}, \frac{7}{9}, \frac{9}{11}, \frac{11}{13}\right\}$ in set builder form
6. Let A={1,2} , B={1,2,3,4} , C={5,6} , D={5,6,7,8} verify that $A \times (B \cap C) = (A \times B) \cap (A \times C)$.
7. Express the following expression in the form of $a + ib$.

$$\frac{(3 + \sqrt{5}\, i\,)(3 - \sqrt{5}\, i)}{(\sqrt{3} + \sqrt{2}\, i\,) - (\sqrt{3} - \sqrt{2}\, i)}$$

8. Solve : $|x - 2| \geq 5$.
9. Solve ; $1 \leq |x - 2| \leq 3$.
10. If (a+ib)(c+id)(e +if) (g + ih) = A + iB , prove that $(a^2 + b^2)(c^2 + d^2)(e^2 + f^2)(g^2 + h^2) = A^2 + B^2$.
11. Do activities no. 1,2,4,5,6 in lab manual .

CHEMISTRY

1. What is the S.I. unit of mass? Write its symbol.
2. What are the reference points in thermometer with Celsius scale?
3. Calculate the amount of carbon dioxide that could be produced when
   i. 1 mole of carbon is burnt in air.
   ii. 1 mole of carbon is burnt in 16 g of dioxygen.
   iii. 2 moles of carbon are burnt in 16 g of dioxygen.
4. What do you mean by significant figures?
5. A vessel contains 1.6 g of dioxygen at STP (273.15K, 1 atm pressure). The gas is now transferred to another vessel at constant temperature, where pressure becomes half of the original pressure. Calculate
   a. volume of the new vessel.
   b. number of molecules of dioxygen
6. 250 ml of 0.5 sodium sulphate (Na_2SO_4) solution are added to an aqueous solution containing 10.0 g of $BaCl_2$, resulting in the formation of white precipitate of $BaSO_4$, How many moles and how many grams of barium sulphate will be obtained?
7. Out of the electron and proton which one will have, a higher velocity to produce matter waves of the same wavelength? Explain it.
8. Which two discoveries put a strong challenge to the Bohr model?
9. In Rutherford's experiment, generally, the thin foil of heavy atoms, like gold, platinum, etc., have been used to be bombarded by the - particles. If the thin foil of light atoms like aluminium, etc., is used, what difference would be observed from the above results?
10. The unpaired electrons in Al and Si are present in 3p orbital. Which electrons were experience more effective nuclear charge from the nucleus?
11. PROJECT

    Study of the methods of purification of water

    OR

    Study of acidity of fruit and vegetable juices.

BIOLOGY

Q. 1. Define and understand the following terms:
(i) Phylum (i) Class (iii) Family (iv) Order (v) Genus
Q. 2. Activity:-
Collect any 10 fruits and 10 plants near by you and written their scientific names.
Q. 3. Give a brief account of viruses with respect to their structure and nature of genetic material. Also name four common viral diseases.

Q. 4. State two economically important uses of:
(a) heterotrophic bacteria
(b) archaebacteria
Q. 5. Give a brief account of kingdoms of:
(a) monera (b) protista
(c) fungi (d) plant
(e) animal
Q. 6. Difference between gymnosperms and angiosperms with examples.
Q. 7. Difference between the following:-
(1) red algae & brown algae
(2) liverworts & moss
(3) homosporous & hetrosporous pteridophyte
Q. 8. Explain the following terms:
(1) protonema
(2) antheridium
(3) archegonium
(4) diplontic
(5) sporophyll
(6) isogamy
Q. 9. summary of:
(a) Porifera (b) Ctenophora
(c) Echinodermata
(d) Chordata
(e) Platyhelminthes
(f) Aschelminthes (g) Annelida (h) Arthropoda
Q. 10. "All vertebrates are chordates but all chordates are not vertebrates".
Justify the statement.
Q No 11 - Make a Chart on life cycle of Angiosperm , Classification of Animal Kingdom , layers in animals.
Q No 12 - Collect different type of leaves and Flowers (Minimum 20) Make herbarium file in herbarium sheet with details or working Model.

PHYSICAL EDUCATION

Q1. Enlist the objective of physical education according to the book Walter and explain any two of them.
Q2. Discuss about the career in sports communication.
Q3. Discuss the different career options in sports performance.
Q4. Briefly discuss the changing trend in physical education in India after independence.
Q5. Write about the khelo India programme.
Q6. What is the role of khelo India program in physical education and sports.
Q7. Write a short note of modern Summer Olympic Games (after 1896) .
Q8. Briefly explain the opening and closing ceremony.
Q9. Write a short note of Indian Olympic Association(IOA)
Q10. You have been made in charge of organising the opening ceremony at the Olympic games that will be held in your country. Your mandate is to showcase the art, culture and history of your country. What would you include? What element would make it fun yet thoughtful? Would it inspire the entire nation or just certain part of it? What message do you wish to convey? Choose one theme present your ideas.

ENGLISH

1. Learn and revise all the syllabus of PERIODIC TEST-I.
2. Design a poster on the topic –'How CNG can be the best alternative to diesel and petrol.' [50 words]
3. Your grandfather is very upset about the rising prices and keeps thinking of his olden times when things were very cheap. You are convinced that inflation has made life difficult for common man. Write a letter in 100-120 words to the editor of a national daily describing the difficulties faced by poor families.
4. You are Raghav /Raghni. Write an article on importance of breakfast as a healthy food habit.
5. Ankit, a class XI student was asked by his teacher to deliver a speech in the morning assembly of his school on "World Environment Day"-5th June. Using ideas given below, together with your own, write the speech in not more than 120 words.
   a. Let's not pollute the air we breathe!
   b. Wake up in fresh air and maintain cleanliness
   c. Plant trees and see them growing
   d. Fight vehicular pollution
6. Mobile phones, video games, internet and play stations have replaced the conventional outdoor games that children used to play. Do you agree? Write an article in about 100-120 words, expressing your agreement or disagreement with the same. (Use A-4 size sheet).
7. Draft a poster on the 'Importance of conservation of electricity. (Use A-4 size sheet).
8. Identify the poetic devices used in the poem A Photograph and discuss their meanings.
9. Write a story review of the chapter 'The Portrait of a Lady' or 'The Summer of the Beautiful White Horse' in about 200 - 250 words.
   ● Begin with the gist of the story. ● Then write how did you like the story and why? ● Then explain which part of the story you liked the most and why? ● Then mention which character is your favourite in it and why? ● And then the conclusion.
10. Prepare the topic of your choice for ASL (Assessment of Speaking and Listening).