

**NORTH-EX PUBLIC SCHOOL**  
(Senior Secondary, Affiliated To CBSE)  
School Block, Jain Nagar, Sector-38, Rohini, Delhi – 81  
**Winter Holiday Homework, 2025-26**  
**Class – XI(Science)**

**English**

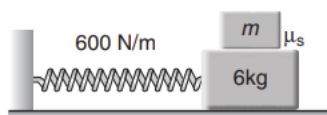
1. Draft a poster on 'Save the Girl Child, Save the Nation' campaign that has been started by the Delhi Commission for Women. (Use A-4 size sheet)
2. You have a DDA flat in Rohini and want to give it on rent. Draft an advertisement for a local daily giving the necessary details.
3. Write a debate for and against on the topic, 'Are old age homes necessary today?' in 120-150 words.
4. Racism is bad. Anyone and everyone can be exposed to racism. Write a speech in 120-150 words on the topic, 'Racism' to be delivered in the morning assembly of your school.
5. Write a speech on the topic 'Is peer pressure beneficial or not?' to be delivered on account of children's Day celebration in your school.
6. You are Ram/ Rajni. Write a debate either for or against the motion: "Hard work and not only good luck helps us to achieve success in life".
7. Prepare the topic of your choice for ASL (Assessment of Speaking and Listening).
8. Prepare your English project file.
9. Learn and practice the format of Notes Making in the test register.
10. Learn and revise all the questions and answers of the chapters done till now.

**Mathematics**

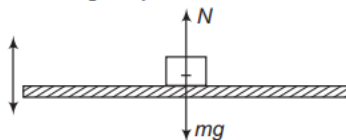
1. Find the centre and radius of  $2x^2 + 2y^2 + 3x + 4y + 9/8 = 0$ .
2. Find the point on Z axis which is equidistance from the points ( 1,5,7) and ( 5 ,1 ,-4).
3. Find the coordinates of Foci , the equation of the directrix and length of latus rectum for the following parabola:  
 $Y^2 = 8x$   
 $X^2 = 6y$   
 $Y^2 = -12x$   
 $X^2 = -16y$
4. Find the equation of the circle which passes through (3,-2) , (-2,0) and has its centre on the line  $2x - y = 3$ .
5. Find the equation of an ellipse whose foci are ( 4, 0) and the eccentricity is  $1/3$ .
6. Find the values of x , if the distance between two points (x, -8,4) and (3 ,-5, 4) is 5 units.
7. Find the equation of the curve formed by the set of all points whose distances from the points (3,4 -5) and (-2,1,4) are equal.
8. Find the points on Y axis which is at a distance units from the point (1,2,3).
9. Find the equation of a circle whose diameter are  $2x-3y+12=0$  and  $x+4y-5=0$  and area is 154 sq units.
10. Complete lab activities in practical files(7,16,18,23,24).

## Physics

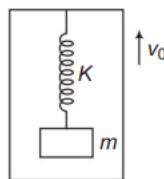
1.  $x-t$  equation of a particle executing SHM is  $x = A \cos(\omega t - 45^\circ)$ . Find the point from where particle starts its journey and the direction of its initial velocity.
2. A mass is suspended separately by two springs and the time periods in the two cases are  $T_1$  and  $T_2$ . Now the same mass is connected in parallel  $K = K_1 + K_2$  with the springs and the time is suppose  $T_p$ . Similarly, time period in series is  $T_s$ , then find the relation between  $T_1, T_2$  and  $T_p$  in the first case and  $T_1, T_2$  and  $T_s$  in the second case.
3. Time period of a block with a spring is  $T_0$ . Now, the spring is cut in two parts in the ratio 2:3. Now find the time period of same block with the smaller part of the spring.
4. With the assumption of no slipping, determine the mass  $m$  of the block which must be placed on the top of a 6 kg cart in order that the system period is 0.75 s. What is the minimum coefficient of static friction  $\mu_s$  for which the block will not slip relative to the cart if the cart is displaced 50 mm from the equilibrium position and released? Take ( $g = 9.8 \text{ m/s}^2$ ).



5. A block is kept over a horizontal platform, executing vertical SHM of angular frequency  $\omega$ . Find maximum amplitude of oscillations, so that the block does not leave contact with the platform.



6. A spring block system is kept inside a lift moving with a constant velocity  $v_0$  as shown in figure. Block is in equilibrium and at rest with respect to lift. The lift is suddenly stopped at time  $t = 0$ . Taking upward direction as the positive direction, write  $x-t$  equation of the block.



7. How much heat is required to convert 8.0 g of ice at  $-15^\circ\text{C}$  to steam at  $100^\circ\text{C}$ ? (Given,  $c_{\text{ice}} = 0.53 \text{ cal/g-}^\circ\text{C}$ ,  $L_f = 80 \text{ cal/g}$  and  $L_v = 539 \text{ cal/g}$ , and  $c_{\text{water}} = 1 \text{ cal/g-}^\circ\text{C}$  )
8. The temperature of equal masses of three different liquids A, B and C are  $12^\circ\text{C}$ ,  $19^\circ\text{C}$  and  $28^\circ\text{C}$  respectively. The temperature when A and B are mixed is  $16^\circ\text{C}$  and when B and C are mixed it is  $23^\circ\text{C}$ . What should be the temperature when A and C are mixed?
9. One end of a rod of length 20 cm is inserted in a furnace at 800 K. The sides of the rod are covered with an insulating material and the other end emits radiation like a black body. The temperature of this end is 750 K in the steady state. The temperature of the surrounding air is 300 K. Assuming radiation to be the only important mode of energy transfer between the surroundings and the open end of the rod, find the thermal conductivity of the rod. Stefan constant  $\sigma = 6.0 \times 10^{-8} \text{ W/m}^2 \text{ K}^{-4}$ . Take emissivity of the open end  $e = 1$ .

10. A bullet of mass 10 g moving with a speed of 20 m/s hits an ice block of mass 990 g kept on a frictionless floor and gets stuck in it. How much ice will melt if 50% of the lost kinetic energy goes to ice? (Temperature of ice block = 0°C).

### Physical Education

1. What are the functions of heart?
2. Describe the circulatory system.
3. What is a joint? Write in detail about the types of joints in human skeleton.
4. Explain in detail different types of bones in human body.
5. Define kinesiology and its importance.
6. Explain in detail, the types of body movements.
7. Explain the importance of biomechanics in physics education and sports.
8. Explain the physical and mental characteristics of early and later childhood.
9. Explain the physical, mental and social characteristics of development.
10. Explain the problem of adolescent and how these can be managed.

### Chemistry

1. Nitric acid is an oxidising agent and reacts with PbO, but it does not react with PbO<sub>2</sub>. Explain why?
2. Calculate the oxidation number of each sulphur atom in the following compounds:  
 (a) Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 (b) Na<sub>2</sub>S<sub>4</sub>O<sub>6</sub>  
 (c) Na<sub>2</sub>SO<sub>3</sub>  
 (d) Na<sub>2</sub>SO<sub>4</sub>
3. Explain redox reactions on the basis of electron transfer. Give suitable examples.
4. Why does fluorine not show a disproportionation reaction?
5. Find out the oxidation number of chlorine in the following compounds and arrange them in increasing order of oxidation number of chlorine.  
 NaClO<sub>4</sub>, NaClO<sub>3</sub>, NaClO, KClO<sub>2</sub>, Cl<sub>2</sub>O<sub>7</sub>, ClO<sub>3</sub>, Cl<sub>2</sub>O, NaCl, Cl<sub>2</sub>, ClO<sub>2</sub>.  
 Which oxidation state is not present in any of the above compounds?
6. Which method can be used to find out the strength of the reductant/oxidant in a solution? Explain with an example.
7. The reaction  

$$\text{Cl}_2(\text{g}) + 2\text{OH}^- (\text{aq}) \rightarrow \text{ClO}^- (\text{aq}) + \text{Cl}^- (\text{aq}) + \text{H}_2\text{O}(\text{l})$$
 represents the process of bleaching. Identify and name the species that bleaches the substances due to their oxidising action.
8. MnO<sub>4</sub><sup>2-</sup> undergoes a disproportionation reaction in an acidic medium but MnO<sub>4</sub><sup>-</sup> does not. Give a reason.
9. PbO and PbO<sub>2</sub> react with HCl according to the following chemical equations:  

$$2\text{PbO} + 4\text{HCl} \rightarrow 2\text{PbCl}_2 + 2\text{H}_2\text{O}$$

$$\text{PbO}_2 + 4\text{HCl} \rightarrow \text{PbCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$$
 Why do these compounds differ in their reactivity?
10. Write a balanced chemical equation for the following reactions:  
 (i) Permanganate ion (MnO<sub>4</sub><sup>-</sup>) reacts with sulphur dioxide gas in an acidic medium to produce Mn<sup>2+</sup> and hydrogensulphate ion.  
 (Balance by ion electron method)

- (ii) Reaction of liquid hydrazine ( $\text{N}_2\text{H}_4$ ) with chlorate ion ( $\text{ClO}_3^-$ ) in basic medium produces nitric oxide gas and chloride ion in a gaseous state. (Balance by oxidation number method)
- (iii) Dichlorine heptaoxide ( $\text{Cl}_2\text{O}_7$ ) in gaseous state combines with an aqueous solution of hydrogen peroxide in acidic medium to give chlorite ion ( $\text{ClO}_2^-$ ) and oxygen gas. (Balance by ion electron method)

### **Biology**

1. Make a Investigatory Project in your Syllabus with related diagram and brief Information.
2. Learn full syllabus & Complete your Practical file & Spotting File as Well.
3. Make Notes of Chapter - 16,17,18,19 with Ncert and Extra Questions as Well.
4. Describe all the Cycle and events with related Diagram - Z Scheme of Light Rxn , Calvin cycle, Cyclic & Non cyclic phosphorylation, Glycolysis, Fermentation and The Citric Acid Cycle.
5. Explain Blood and it's formed elements with explanation.
6. What is Cardiac Cycle ? Explain Double Circulation & ECG with related Diagram?
7. What is Skeleton system & it's disorders?
8. Explain Endocrine Glands and it's components brief with labelled Diagram?
9. Explain - i) Cell and it's organelles with related diagram ii) Non chordata with features and related diagram.
10. What is Biomolecules? Explain its components with related structures?