



YUGANTAR PUBLIC SCHOOL

SUMMER VACATION H.W. (2023-24)

CLASS - XII (Science)

S.NO	SUBJECT	TOPICS
1.	ENGLISH	<ol style="list-style-type: none">Choose any two comprehension paragraph from any good reference book / online resources and solve them with question.Read the newspaper daily and cut samples of the following in the fair register of English underlining it with holiday homework. Notice Writing – Sports/ Cultural / Social Invitation writing – Events / Functions Report writing – on the field of interest eg: politics, sports etc. Article Writing – as per your choiceLearn and Revise “ MY MOTHER AT SIXTY SIX” & “THE LAST LESSON”
2.	HINDI	<p>हालावाद् के प्रवर्तक : हरिवंश राय बच्चन के एक परियोजना कार्य लगभग 1000 शब्दों तैयार कीजिए । अथवा राम – काव्यधारा के प्रणेता : गोस्वामी तुलसीदास एक परियोजना कार्य लगभग 1000 शब्दों तैयार कीजिए । (परियोजना कार्य में स्वयं द्वारा निर्मित चित्र, तत्कालीन इतिहास आदि का भी उल्लेख किया जाना चाहिए ।)</p>
3.	Physics	<ol style="list-style-type: none">Define the term electric dipole moment of a dipole. State its S.I. unit.Name the physical quantity whose S.I. unit is JC^{-1}. Is it a scalar or a vector quantity?Why should electrostatic field be zero inside a conductor?A charge 'q' is placed at the centre of a cube of side l. What is the electric flux passing through each face of the cube?Depict the direction of the magnetic field lines due to a circular current carrying loop.Write the expression for the work done on an electric dipole of dipole moment p in turning it from its position of stable equilibrium to a position of unstable equilibrium in a uniform electric field E.Why do the electric field lines never cross each other?What is the electric flux through a cube of side 1 cm which encloses an electric dipole?Draw a plot showing variation of electric field with distance from the centre of a solid conducting sphere of radius R, having a charge of +Q on its surface.Derive an expression for the torque experienced by an electric dipole kept in a uniform electric field.A thin straight infinitely long conducting wire having charge density λ is enclosed by a cylindrical surface of radius r and length l, its axis coinciding with the length of the wire. Find the expression for the electric flux through the surface of the cylinder.Given a uniform electric field $\vec{E} = 5 \times 10^3 \hat{i} \text{ N/C}$, find the flux of this field through a square of 10 cm on a side whose plane is parallel to the y-z plane. What would be the flux through the same square if the plane makes a 30° angle with the x-axis?A sphere S_1 of radius r_1 encloses a net charge Q. If there is another concentric sphere S_2 of radius r_2 ($r_2 > r_1$) enclosing charge 2Q, find the ratio of the electric flux through S_1 and S_2. How will the electric flux through sphere S_1 change if a medium of dielectric constant K is introduced in the space inside S_2 in place of air?State Gauss's law and prove.Two charged spherical conductors of radii R_1 and R_2 when connected by a conducting wire

		<p>acquire charges q_1 and q_2 respectively. Find the ratio of their surface charge densities in terms of their radii</p> <p>16. What if electric field lines intersect? Write its properties.</p> <p>17.</p>
<p>4.</p>	<p>Chemistry</p>	<p>1. Read and learn the notes of chapter "Solution" along with the various numericals solved in the classroom.</p> <p>2. Answer the following Board's questions:</p> <p>A) State Raoult's law for the solution containing volatile components. What is the similarity between Raoult's law and Henry's law?</p> <p>B) State Henry's law. Write its one application. What is the effect of temperature on solubility of gases in liquid?</p> <p>C) State Raoult's law for the solution containing volatile components. Write two differences between an ideal solution and a non-ideal solution.</p> <p>D) Write two differences between a solution showing positive deviation and a solution showing negative deviation from Raoult's law.</p> <p>E) Give reasons:</p> <p>(i) Why is an increase in temperature observed on mixing chloroform and acetone?</p> <p>(ii) Why does sodium chloride solution freeze at a lower temperature than water?</p> <p>F) Define azeotropes. What type of azeotrope is formed by negative deviation from Raoult's law? Give an example.</p> <p>G) Derive the relationship between relative lowering of vapour pressure and molar mass of the solute.</p> <p>H) Define the term osmotic pressure. Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure.</p> <p>I) A solution prepared by dissolving 8.95 mg of a gene fragment in 35.0 mL of water has an osmotic pressure of 0.335 torr at 25°C. Assuming that the gene fragment is a non-electrolyte, calculate its molar mass.</p> <p>J) Give reasons:</p> <p>(i) Cooking is faster in pressure cooker than in cooking pan.</p> <p>(ii) Red Blood Cells (RBC) shrink when placed in saline water but swell in distilled water.</p> <p>K) Define the following terms:</p> <p>(i) Abnormal molar mass</p> <p>(ii) van't Hoff factor (i)</p> <p>L) Calculate the freezing point of a solution when 3 g of CaCl_2 ($M = 111 \text{ g mol}^{-1}$) was dissolved in 100 g of water, assuming CaCl_2 undergoes complete ionisation. (K_f for water = $1.86 \text{ K kg mol}^{-1}$)</p> <p>M) 3.9 g of benzoic acid dissolved in 49 g of benzene shows a depression in freezing point of 1.62 K. Calculate the van't Hoff factor and predict the nature of solute (associated or dissociated). (Given: Molar mass of benzoic acid = 122 g mol^{-1}, K_f for benzene = $4.9 \text{ K kg mol}^{-1}$)</p>

- N) At 300 K, 30 g of glucose, $C_6H_{12}O_6$ present per litre in its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of another glucose solution is 1.52 bar at the same temperature, calculate the concentration of the other solution.
- O) A solution containing 1.9 g per 100 mL of KCl ($M = 74.5 \text{ g mol}^{-1}$) is isotonic with a solution containing 3 g per 100 mL of urea ($M = 60 \text{ g mol}^{-1}$). Calculate the degree of dissociation of KCl solution. Assume that both the solutions have same temperature.
- P) i) Define the following terms:
 (a) Molarity
 (b) Molal elevation constant (K_b)
 (ii) A solution containing 15 g urea (molar mass = 60 g mol^{-1}) per litre of solution in water has the same osmotic pressure (isotonic) as a solution of glucose (molar mass = 180 g mol^{-1}) in water. Calculate the mass of glucose present in one litre of its solution.
- Q) i) Explain why on addition of 1 mol glucose to 1 litre water the boiling point of water increases.
 (ii) Henry's law constant for CO_2 in water is $1.67 \times 10^8 \text{ Pa}$ at 298 K. Calculate the number of moles of CO_2 in 500 ml of soda water when packed under $2.53 \times 10^5 \text{ Pa}$ at the same temperature.
- R) (i) When 2.56 g of sulphur was dissolved in 100 g of CS_2 , the freezing point lowered by 0.383 K. Calculate the formula of sulphur (S_x).
 [K_f for $CS_2 = 3.83 \text{ K kg mol}^{-1}$, Atomic mass of Sulphur = 32 g mol^{-1}]
 (ii) Blood cells are isotonic with 0.9 % sodium chloride solution. What happens if we place blood cells in a solution containing
 (a) 1.2% sodium chloride solution?
 (b) 0.4% sodium chloride solution?
 iii) Why a person suffering from high blood pressure is advised to take minimum quantity of common salt?
 iv) 2 g of benzoic acid (C_6H_5COOH) dissolved in 25 g of benzene shows a depression in freezing point equal to 1.62 K. Molal depression constant for benzene is $4.9 \text{ K kg mol}^{-1}$. What is the percentage association of acid if it forms dimer in solution?
- S) (i) Give reasons for the following:
 (a) At higher altitudes, people suffer from a disease called anoxia. In this disease, they become weak and cannot think clearly.
 (b) When mercuric iodide is added to an aqueous solution of KI, the freezing point is raised.
 (ii) 0.6 mL of acetic acid (CH_3COOH), having density 1.06 g mL^{-1} , is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was 0.0205°C . Calculate the van't Hoff factor and the dissociation constant of acid.
- T) i) Define the following terms:
 (a) Azeotrope (b) Osmotic pressure
 (c) Colligative properties
 (ii) Calculate the molarity of 9.8% (w/w) solution of H_2SO_4 if the density of the solution is 1.02 g mL^{-1} . (Molar mass of $H_2SO_4 = 98 \text{ g mol}^{-1}$)

5.	Biology	Revise and complete the notes of chapter 1, 2 and Solve last 5 years board questions of these chapters.
6.	Maths	Practice the Questions of Matrices & Determinants, Derivative. Solve last 5 years board questions of these chapters.
7.	Physical Education	Complete notes of unit 1 Planning in Sports. & Prepare project file on Basketball Acknowledgement, history and origin, dimensions of the court, fundamental skills, rules and regulations, award, different tournaments related Basketball.
8.	IP	Learn Social Impact of It : Plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act. E-waste: hazards and management. Awareness about health concerns related to the usage of technology.

Class Teacher

HOD

Principal