

KENDRIYA VIDYALAYA PONDA GOA
HOLIDAY HOME WORK

STD. XII

SUBJECT: ENGLISH

1. Read the novel and write the main points of each chapter.
2. Revise the entire portion for the month of April for a class test on reopening.
3. Prepare articles on the following topics.

Digital India, Save the girl child/ Beti Padhao Beti Bachao, Skilled India, Swatch Bharat ,Demonetizations Save the environment.

4. Write a report on Earth Day celebration in your school.

Class: XII

Subject: Physics

1. Solving board paper questions from Electrostatics and Current Electricity.
2. Prepare a question bank from the Electrostatics and Current Electricity

Class: XII

Subject: Chemistry

Chapter: Solid State

1. What are anisotropic substances?
2. Why are amorphous solids isotropic in nature? 3. Why glass is regarded as an amorphous solid? 4. Define the term 'crystal lattice.' 5. Define the term voids.
3. What type of stoichiometric defect is shown by (i) ZnS and (ii) CsCl? [Hint. : (i) Frenkel defect (ii) Schottky defect] *
4. If the formula of a compound is A_2B , which sites would be occupied by A ions? [Hint. : Number of A ions is double to B ions, so ions will occupy tetrahedral voids]
5. What is the coordination number for (a) an octahedral void (b) a tetrahedral void. [Hint. : (a) 6; (b) 4] *
6. How many octahedral voids are there in 1 mole of a compound having cubic closed packed structure? [Ans. : 1 mole]
7. Arrange simple cubic, bcc and fcc lattice in decreasing order of the fraction of the unoccupied space. [Hint. : fcc < bcc < sc]
8. How much space is empty in a hexagonal closed packed solid?

9. Sodium crystallizes in a bcc unit cell. What is the approximate number of unit cells in 4.6 g of sodium? Given that the atomic mass of sodium is 23g mol⁻¹. [Ans. : 6.022×10^{22}]
10. In a crystalline solid anions 'C' are arranged in cubic close packing, cations 'A' occupy 50% of tetrahedral voids and cations 'B' occupy 50% of octahedral voids. What is the formula of the solid? [Ans. : A₂BC₂]
11. Magnetite, a magnetic oxide of iron used on recording tapes, crystallizes with iron atoms occupying 1/8 of the tetrahedral holes and 1/2 of the octahedral holes in a closed packed array of oxides ions. What is the formula of magnetite? [Ans. : Fe₃O₄]
12. A metal crystallizes into two cubic lattices fcc and bcc, whose edge length are 3.5Å and 3.0Å respectively. Calculate the ratio of the densities of fcc and bcc lattices.
13. An element of atomic mass 98.5 g mol⁻¹ occurs in fcc structure. If its unit cell edge length is 500 pm and its density is 5.22 g cm⁻³. Calculate the value of Avogadro constant. [Ans. : 6.03×10^{23} mol⁻¹]
17. An element crystallises in a cubic close packed structure having a fcc unit cell of an edge 200 pm. Calculate the density if 200 g of this element contain 24×10^{23} atoms. [Ans. : 41.6 g cm⁻³]
18. Analysis shows that a metal oxide has a empirical formula M_{0.96}O. Calculate the percentage of M²⁺ and M³⁺ ions in this crystal. [Ans. : M²⁺ = 91.7%, M³⁺ = 8.3%]
19. AgCl is doped with 10⁻² mol% of CdCl₂, find the concentration of cation vacancies. [Ans. : 10⁻⁴ mol]

Chapter: SOLUTION

1. (a) State Henry's Law. (b) If O₂ is bubbled through water at 393 K, how many millimoles of O₂ gas would be dissolved in 1L of water? Assume that O₂ exerts a pressure of 0.95 bar. (Given K_H for O₂ = 46.82 barat393K).
2. Given reason for the following :-
 (a) Aquatic species are more comfortable in cold waters than in warm waters.

- (b) To avoid bends scuba divers use air diluted with helium.
- (c) Cold drinks bottles are sealed under high pressure of CO₂.
3. Why should a solution of a non-volatile and non-electrolyte solute boil at a higher temperature? Explain with the help of a diagram. Derive the relationship between molar mass and elevation in boiling point.
4. Account for the following:-
- (a) CaCl₂ is used to clear snow from roads in hill stations.
- (b) Ethylene glycol is used as antifreeze solution in radiators of vehicles in cold countries.
- (c) The freezing point depression of 0.01 m NaCl is nearly twice that of 0.01 m glucose solution.
5. Why do colligative properties of solution of a given concentration are found to give abnormal molecular weight of solute. Explain with the help of suitable examples.
6. Give reasons for the following:-
- (a) RBC swell up and finally burst when placed in 0.1% NaCl solution.
- (b) When fruits and vegetables that have been dried are placed in water, they slowly swell and return to original form
1. (a) State Henry's Law.
- (b) If O₂ is bubbled through water at 393 K, how many millimoles of O₂ gas would be dissolved in 1L of water? Assume that O₂ exerts a pressure of 0.95 bar.

(Given KH for O₂ = 46.82 bar at 393K).

2. Given reason for the following:-
- (a) Aquatic species are more comfortable in cold waters than in warm waters.
- (b) To avoid bends scuba divers use air diluted with helium.
- (c) Cold drinks bottles are sealed under high pressure of CO₂
3. Why should a solution of a non-volatile and non-electrolyte solute boil at a higher temperature? Explain with the help of a diagram. Derive the relationship between molar mass and elevation in boiling point.
4. Account for the following:-
- (a) CaCl₂ is used to clear snow from roads in hill stations.
- (b) Ethylene glycol is used as antifreeze solution in radiators of vehicles in cold countries.
- (c) The freezing point depression of 0.01 m NaCl is nearly twice that of 0.01 m glucose solution.
5. Why do colligative properties of solution of a given concentration are found to give abnormal molecular weight of solute. Explain with the help of suitable examples.

6. Give reasons for the following:–
 - (a) RBC swell up and finally burst when placed in 0.1% NaCl solution.
 - (b) When fruits and vegetables that have been dried are placed in water, they slowly swell and return to original form.
 - (c) A person suffering from high blood pressure is advised to take less amount of table salt.
7. Glycerine, ethylene glycol and methanol are sold at the same price per kg. Which would be cheaper for preparing an antifreeze solution for the radiator of an automobile? [Ans. : Methanol]
8. Determine the correct order of the property mentioned against them:
 - (a) 10% glucose (p1), 10% urea (p2), 10% sucrose (p3) [Osmotic pressure]
 - (b) 0.1 m NaCl, 0.1 m urea, 0.1 m MgCl₂[Elevation in b.pt.]
 - (c) 0.1 m CaCl₂, 0.1 m sucrose, 0.1 m NaCl [Depression in f.pt.]
9. For a dilute solution containing 2.5 g of a non-volatile non-electrolyte solute in 100 g of water, the elevation in boiling point at 1 atm pressure is 2°C. Assuming concentration of solute is much lower than the concentration of solvent, determine the vapour pressure (mm of Hg) of the solution.[Given : K_b for water = 0.76 kg mol⁻¹] [Ans.: 724 mm of Hg]
10. 15.0 g of an unknown molecular substance was dissolved in 450 g of water. The resulting solution was found to freeze at -0.34°C. What is the molar mass of this substance? (K_f for water = 1.86 K kg mol⁻¹).

Chapter: EELECTROCHEMISTRY

1. What do you mean by (i) negative standard electrode potential and (ii) positive standard electrode potential ?
2. Which cell is generally used in hearing aids? Name the material of the anode, cathode and the electrolyte. Write the reactions involved.
3. Iron does not rust even if Zinc coating is broken in a galvanised iron pipe but rusting occurs much faster if tin coating over iron is broken Explain.
4. 'Corrosion is an electrochemical phenomenon', explain.
5. Calculate the pH of following cell: Pt, H₂/ H₂SO₄, if its electrode potential is 0.03V.
6. A cell contains two hydrogen electrodes. The negative electrode is in contact with a solution of 10⁻⁵ M H⁺ ions. The emf of the cell is 0.118 V at 298 K. Calculate the concentration of the H⁺ ions at the positive electrode.
7. Crude copper containing Fe and Ag as contaminations was subjected to electro refining by using a current of 175 A for 6.434 min. The mass of anode was found to decrease by 22.260 g, while that of cathode was increased by 22.011 g. Estimate the % of copper, iron and silver in crude copper.
8. Zinc electrode is constituted at 298 K by placing Zn rod in 0.1 M aq solution of zinc sulphate which is 95 % dissociated at this concentration. What will be the electrode potential of the electrode given that E⁰Zn²⁺/Zn = - 0.76 V. 3

9. At what pH will hydrogen electrode at 298 K show an electrode potential of -0.118 V, when Hydrogen gas is bubbled at 1 atm pressure ? 3

Chapter: CHEMICAL KINETICS

1. The half-life period of two samples are 0.1 and 0.4 seconds. Their initial Concentrations are 200 and 50 mol L⁻¹ respectively. What is the order of reaction?
2. What is the ratio of $t_{3/4} : t_{1/2}$ for a first order reaction ?
3. Higher molecularity reactions (viz. molecularity, 4 and above) are very rare. Why?
4. Consider the reaction $2A + B \longrightarrow$ Products
When concentration of B alone was doubled, half life time does not change. When conc. of A alone is doubled, the rate increases by two times. What is the unit of K and what is the order of the reaction?
5. For the reaction, the energy of activation is 75KJ / mol. When the energy of activation of a catalyst is lowered to 20KJ / mol. What is the effect of catalyst on the rate of reaction at 200C.
6. What do you understand by the rate of a reaction? How it is expressed? How it is the rate of reaction determined?
7. What do you understand by order of a reaction? How does rate law differ from law of mass action? Give two example of each of the reactions of (i) zero order (ii) first order (iii) second order
8. Derive the equation for the rate constant for a first order reaction. What would be the units of the first order rate constant if the concentration is expressed in mole per litre and time in seconds?
9. Explain why the rate of reaction increases with increase in temperature.
10. Briefly explain the effect of temperature on the rate constant of a reaction.

Note : Prepare question Bank for all the chapters taught.

Class-XII

Subject: BIOLOGY

1. Prepare question Bank for all the Chapters taught.

Class-XII

Subject: Computer Science

1. Prepare question Bank for all the Chapters taught.
2. Prepare a PowerPoint presentation on Revision tour of Class-XI.