

Holiday Homework 2019 – 2020

Class XII Science

Chemistry

1. Will the elevation in boiling point be same if 0.1 mol of Sodium chloride or 0.1 mol of sugar is dissolved in 1 L of water? Explain. (2)
2. Calculate the boiling point of a 1M aqueous solution (density 1.04 g ml^{-1}) of Potassium chloride (K_b for water = $0.52 \text{ K Kg mol}^{-1}$, Atomic masses : K = 39u, Cl = 35.5u). Assume Potassium chloride is completely dissociated in solution. (3)
3. What is meant by positive deviations from Raoult's law? Give an example. What is the sign of $\Delta_{\text{mix}} H$ for positive deviation? (2)
4. Define azeotropes. What type of azeotrope is formed by positive deviation from Raoult's law? Give an example. (2)
5. 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 = $4.9 \text{ K Kg mol}^{-1}$) (3)
6. State Henry's law. Why do gases always tend to be less soluble in liquids as the temperature is raised? (2)
7. State Raoult's law for the solution containing volatile components. Write two differences between an ideal solution and a non-ideal solution. (2)
8. Calculate the amount of CaCl_2 (molar mass = 111 g mol^{-1}) which must be added to 500 g of water to lower its freezing by 2 K, assuming CaCl_2 is completely dissociated. (K_f for water = $1.86 \text{ K Kg mol}^{-1}$) (3)
9. What are isotonic solutions? (2)
10. Calculate the mass of compound of compound (molar mass = 256 g mol^{-1}) to be dissolved in 75 g of benzene to lower its freezing point by 0.48 K ($K_f = 5.12 \text{ K kg mol}^{-1}$) (2)
11. Define an ideal solution and write one of its characteristics. (2)
12. Some liquids form 'azeotropes'. What are azeotropes? (1)
13. State Henry's law. What is the effect of temperature on the solubility of a gas in a liquid? (2)
14. State Raoult's law for the solution containing volatile components. What is the similarity between Raoult's law and Henry's law? (2)
15. (a) Define the following terms:
 - (i) Molarity
 - (ii) Molal elevation constant (K_b)(b) A solution containing 15g 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. (5)

16. (a) what type of deviation is shown by a mixture of ethanol and acetone? Give reason.
 (b) A solution of glucose (molar mass = 180 g mol^{-1}) in water is labeled as 10% (by mass). What would be the molality and molarity of the solution? (Density of solution = 1.2 g mol^{-1}) (5)
17. 18 g of glucose (molar mass = 180 g mol^{-1}) is dissolved in 1 Kg of water in a sauce pan. At what temperature will this solution boil (K_b for water = $0.52 \text{ K Kg mol}^{-1}$, boiling point of pure water = 373.15 K). (2)
18. Calculate amount of K_2SO_4 dissolved in 250g of water shows osmotic pressure 0.8 atm at 25°C , assuming that it is completely dissociated. (Molar mass of $\text{K}_2\text{SO}_4 = 174 \text{ g mol}^{-1}$). (3)
19. 1.00 g of non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. Find the molar mass of the solute (K_f for benzene = 5.12 K mol^{-1}). (3)
20. (a) Define the following terms:
 (i) Ideal solution (ii) Azeotrope (iii) Osmotic pressure
 (b) A solution of glucose in water is labeled as 10% by weight. What would be the molality of the solution? (5)
21. Define : (i) Mole fraction (ii) Molality of a solution (2)
22. A 5% solution (by mass) of cane-sugar (M.W. 342) is isotonic with 0.877% solution of substance X. Find the molecular weight of X. (3)
23. 45 g of ethylene glycol ($\text{C}_2\text{H}_6\text{O}_2$) is mixed with 600 g of water. Calculate (i) the freezing point depression and (ii) the freezing point of the solution (Given : K_f of water = $1.86 \text{ K Kg mol}^{-1}$). (3)
24. A solution is prepared by dissolving 10 g of non-volatile solute in 200 g of water. It has a vapour pressure of 31.84 mm Hg at 308 K. Calculate the molar mass of the solute. (Vapour pressure of pure water at 308 K = 32 mm Hg). (3)
25. (i) On mixing liquid X and liquid Y, volume of the resulting solution decreases. What type of deviation from Raoult's law is shown by the resulting solution? What change in temperature would you observe after mixing liquids X and Y?
 (ii) What happens when we place the blood cell in water (hypotonic solution)? Give reason. (2)
26. Define osmotic pressure of a solution. How is the osmotic pressure related to the concentration of a solute in a solution? (2)
27. 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 = $4.9 \text{ K Kg mol}^{-1}$] (3)
28. The partial pressure of ethane over a saturated solution containing $6.56 \times 10^{-2} \text{ g}$ of ethane 1 bar. If the solution were to contain $5.0 \times 10^{-2} \text{ g}$ of ethane, then what will be the partial pressure of the gas? (3)
29. Mention any two applications of Henry's law. (1)
30. If N_2 gas is bubbled through water at 293K, how many millimoles of N_2 gas would dissolved in 1 litre of water? Assume that N_2 exerts a partial pressure of 0.987 bar. Given that Henry's law constant for N_2 at 293K is 76.48 K bar . (3)
31. A solution containing 30 g of non-volatile solute exactly in 90 g of water has a vapour pressure of 2.8 kPa at 298 K. Further 18 g of water is added to this solution. The new vapour pressure becomes 2.9 kPa at 298 K. Calculate
 (i) the molecular mass of solute and (ii) vapour pressure of water at 298 K. (3)

32. 15.0 g of an unknown molecular material is dissolved in 450 g of water. The resulting solution freezes at -0.34°C . What is the molar mass of the material? (k_f for water = $1.86 \text{ K kg mol}^{-1}$). (3)
33. Calculate the amount of KCl which must be added to 1 Kg of water so that the freezing point is depressed by 2K. (K_f for water = $1.86 \text{ K kg mol}^{-1}$) (3)
34. 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 . Calculate its molar mass. (3)

Physics

Make a working model based on any topic of your Syllabus and prepare project report for it.

BIOLOGY

UNIT – VI REPRODUCTION

Chapter-1 Reproduction in organisms

Asexual and Sexual reproduction

Chapter-2 Sexual reproduction in flowering plants

Flower- A fascinating organ of angiosperms. pre-fertilisation, structures and events, Double fertilisation, Post fertilisation – structure and events.

Apomixis and polyembryony.

Chapter-3 Human Reproduction

The male reproductive system, the female reproductive system. Gamete formation, menstrual cycle, fertilisation and implantation, pregnancy and embryonic development, parturition and lactation.

Chapter-4 Reproductive Health

Reproductive health- problems and strategies, population explosion and birth Control, medical termination of pregnancy, Sexually transmitted diseases, infertility.

Prepare questions and answers of the above four chapters, also practice important diagrams, flowcharts and previous years questions dictated in the class. This complete unit will be asked in the first unit test.

Physical Education

1. Make knock out tournament fixture
 - a. 11 team
 - b. 19 team
2. Make league tournament fixture staircase method, cycle method, Tabular method.
 - a. 07 team
 - b. 08 team
3. Make knockout cum league tournament fixture
 - a. 19 team
 - b. 24 team
4. Make league cum Knockout tournament Fixture
 - a. 23 team
 - b. 32 team
5. 12 team knock out tournament fixture with fixed four seeding
6. Explain the various adventure sport activities along with picture (any 03)
River rafting, Mountaineering, Tracking, Paragliding, Surfing .
7. Projects file for (Annual practical file) With exercises photo
 - a. YOGA (ASANAS) As preventive measures
Asthma, Diabetes, Obesity, Hypertension, Back pain, Blood pressure.
 - b. PLYOMETRIC EXERSICE
 - c. LEADERSHIP QWALITIES IN SPORTS

Above topic explain by various points

Introduction , types , benefits , conclusion .

Informatics Practices

Computer Networking