KENDRIYA VIDYALAYA NHPC GERUKAMUKH

DHEMAJI ASSAM-787035

HOLIDAY HOMEWORK (ALL SUBJECTS)

SUMMER VACATION

NOTE: DURATION OF BREAK:- 02/05/2021 TO 20/06/2021

YOU HAVE TO SUBMIT YOUR HOLIDAY ASSIGNMENT IN PDF FORMAT SEPARETLY OF ALL SUBJECT IN YOUR RESPECTIVE GOOGLE CLASS ROOM.

TAKE GOOD CARE OF YOURS AND FAMILY, FOLLOW GOOD DIET AND SOPS OF GOVT OF INDIA.

LASTLY,ENTIRE FAMILY OF KV NHPCGERUKAMUKH WISHES YOU A HAPPY AND HEALTHY SUMMER VACATION.

SUMMER HOLIDAY HOME WORK CLASS 12 SCIENCE

CHEMISTRY

2.SOLUTIONS

1 MARKS QUESTIONS:-

1. Define mole fraction? [CBSE outside Delhi, 2013; Outside Delhi, Delhi, 2012].
2. State Henry's law about partial pressure of a gas in a mixture? [CBSE outside Delhi, 2012].
3. Define an ideal solution? [CBSE outside Delhi, 2013, 2012].
4. Some liquids on mixing form 'azeotropes'. What are 'azeotropes'? [CBSE Delhi, 2014].
5. What type of intermolecular attractive interaction exists in the pair of methanol and acetone? [CBSE Delhi, 2014].
6. What are isotonic solutions? [CBSE Delhi, 2014].
7. Define the following terms: [CBSE Delhi/outside Delhi, 2012].
   a) Isotonic solutions.
   b) Van't Hoff factor.
8. Define the term osmotic pressure? [CBSE outside Delhi, 2013].
9. What is meant by term reverse osmosis? [CBSE outside Delhi, 2013].
10. Explain boiling point elevation constant for a solvent or ebullioscopic constant? [CBSE outside Delhi/Foreign 2012].

2 MARKS QUESTIONS:-

1. Define the following terms: - [Comptt. Outside Delhi, 2015].
   a) Mole fraction (x).
   b) Molarity of a solution (m).
2. State Henry's law. What is the effect of temperature on the solubility of a gas in a liquid? [CBSE Delhi, 2014].
3. State Henry's law and mention two of its important applications? [Comptt. Outside Delhi, 2012].
4. The partial pressure of ethane over a saturated solution containing 6.56×10^{-2} g of ethane is 1 bar. If the solution were to containing 5.0×10^{-2} g of ethane, then what will be the partial pressure of the gas? [Comptt. Delhi, 2013].
5. Heptane and octane form an ideal solution. At 373K, the vapour pressure of the two liquid components are 105.2 kPa and 48 48.6 kPa, respectively. What will be the vapour pressure of a mixture of 26.0 g of heptane and 35.0 g of octane? [CBSE 2019].
6. What is meant by positive deviations from Raoult's law? Give an example. What is sign of Δ mix H for positive deviation?

OR

Define azeotropes. What type of azeotropes is formed by positive deviation from Raoult's law? Give an example. [CBSE Delhi, 2015].

7. Define an ideal solution and write one of its characteristics? [CBSE Delhi, 2014].
8. State Raoult's law for the solution containing volatile components. What is the similarity between Raoult's law and Henry's law? [CBSE Delhi, 2014].
9. State the Raoult's law. How is it formulated for solutions of non-volatile solutes? [Comptt. Delhi, 2012].

OR

Derives expressions for Raoult's law when the solute is non- volatile?

[Comptt. Delhi, 2013]

10. A) Gas (A) is more soluble in water than Gas (B) at the same temperature. Which one of the gases will have the higher value f K_H (Henry's constant) and why?

B) In non-ideal solution, what type of deviation shows the formation of maximum boiling azeotropes? [CBSE outside Delhi, 2016].

11. Define osmotic pressure. How is the osmotic pressure related to the concentration of a solute in a solution? [Comptt. Outside Delhi, 2016; Delhi, 2015].

12. A 1.00 molar aqueous solution of trichloroacetic acid (CCl_3COOH) is heated to its boiling point. The solution has the boiling point of 100.18 °C . Determine the Van't Hoff factor for trichloroacetic acid. (k_b for water = 0.512 K kg mol^{-1}).

OR

Define the following terms: - [CBSE Delhi, 2012]

a) Mole fraction.
b) Isotonic solutions.
c) Van't Hoff factor.
d) Ideal solution.

13. Calculate the mass 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 K kg mol^{-1}). [CBSE Delhi, 2014]

14. 18 g of glucose, $C_6H_{12}O_6$ (Molar mass = 108 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 K kg mol^{-1}, boiling point of pure water =373.15 K).

[Delhi set-I, II, III, 2013]

15. Will the elevation in boiling point be same if 0.1 mol of sodium chloride or 0.1 mol of sugar is dissolved in 1L water? Explain.

3 MARKS QUESTIONS:-

1. Calculate the boiling point of solution when 4g of $MgSO_4$ (M = 120 g mol^{-1}) was dissolved in 100g of water, assuming $MgSO_4$ undergoes complete ionization. (K_b for water = 0.52 K kg mol^{-1}).
   [CBSE outside Delhi, 2016]
2. 45 g of ethylene glycol ($C_2H_4O_2$) is mixed with 600g of water. Calculate
   A) The freezing point depression and.
   B) The freezing point of the solution.
   (Given: K_f of water = 1.86 K kg mol^{-1}).
   [Comptt. Delhi, 2015]
3. A 5 percent solution (by mass) of cane-sugar (M.W 342) is isotonic with 0.877% solution of substance X. Find the molecular weight of X. [Comptt. Outside Delhi, 2015]
4. 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).
   [CBSE outside Delhi, 2015]
5. Determine the osmotic pressure of a solution prepared by dissolving 2.5 x 10^{-2} g of K2SO4 in 2L of water at 25 °C, assuming that it is completely dissociated.
   (R = 0.0821 L atm K^{-1} mol^{-1}, molar mass of K_2SO_4 = 174 g mol^{-1}).
6. 1.00 g of a non electrolyte solute when 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 kg mol^{-1}). [CBSE outside Delhi, 2015]
7. 3.9 g of benzene acid dissolved in 49 g of benzene shows a depressions 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 K kg mol^{-1}).
   [CBSE Delhi, 2015]
8. At 25 °C, the saturated vapour pressure of water is 3.165 k Pa (23.75 mm Hg) . Find the saturated vapour pressure of a 5% aqueous solution of urea (carbamide) at the temperature. (Molar mass of urea = 60.05 g mol^{-1}). [CBSE Foreign 2012]

9. Calculate the amount of KCl which must be added to 1kg of water so that the freezing point is depressed by 2K. (K_f for water = 1.86 K kg mol^{-1}). [Delhi Set I, 2012]
10. Calculate the boiling point of a 1M aqueous solution (density 1.04 g mL^{-1}) of potassium chloride (K_b for water = 0.52 K kg mol^{-1}, Atomic masses: K=39 u, Cl = 35.5 u). Assume Potassium Chloride is completely dissociated in solution.
11. A solution of Glycerol ($C_3H_8O_3$) in water was prepared by dissolving some Glycerol in 500 g of water. This solution has a boiling point of 100.42 C while pure water boils at 100 C. What mass of glycerol was dissolved to make the solution? (K_b for water = 0.512 K kg mol^{-1}). [CBSE Delhi, 2012]

5 MARKS QUESTIONS:-

1. A. Define the following terms
   1. Molarity.
   2. Molal elevation constant (K_b).

B. A solution contains 15 g urea (molar mass = 60 g mol^{-1}) per litre of solution in water ha 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. [CBSE outside Delhi, 2014

2. I. What type of deviation is shown by a mixture of ethanol and acetone? Give reason.
   II. A solution of glucose (molar mass = 180 g mol^{-1}) in water is labelled as 10% (by mass). What would be the molality and molarity of the solution?
   (Density of solution = 1.2 g mL^{-1}). [CBSE outside Delhi, 2014]
3. I. The vapour pressure of benzene and toluene at 293K are 75 mm Hg and 22 mm Hg respectively. 23.4 g of benzene and 64.4 g of toluene are mixed. If the two form an ideal solution, calculate the mole fraction of benzene in the vapour pressures are in equilibrium with the liquid mixture at this temperature.
   II. What is meant by + ve and – ve deviations from Raoult's law and how is the sign of H solution related to + ve and –ve deviations from Raoult's law? [Comptt. Outside Delhi, 2014]
4. I. Define the following terms :-
   a. Ideal solution.
   b. Azeotrope.
   c. Osmotic pressure.

   II. A solution of glucose ($C_6H_{12}O_6$) in water is labelled as 10% by weight. What would be the molality of the solution?

   (Molar mass of glucose = 180 g mol^{-1})

5. I. Define the following terms :-
   a. Mole fraction,
   b. Ideal solution.

   II. 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 materials.(K_f for water = 1.86 K kg mol^{-1}).

   [CBSE outside Delhi, 2012]

6. I. Explain the following :
   a. Henry's law about dissolution of a gas in a liquid,
   b. Boiling point elevation constant for a solvent.

   II. A solution of glycerol ($C_3H_8O_3$) in water prepared by dissolving some glycerol in 500g of water. This solution has a boiling point of 100.42 C. What mass of glycerol was dissolved to make this solution? (K_b for water = 0.512 K kg mol^{-1}) [CBSE outside Delhi, 2012]
7. I. A 5% solution (by mass) of cane – sugar in water has freezing point of 273.15 K. (Molecular masses: glucose $C_6H_{12}O_6$: 180 amu; cane x sugar $C_{12}H_{12}O_{11}$: 342 amu)
   II. State Henry's law and mention two of its important applications?
   [Comptt. Outside Delhi, 2013]

CLASS- XII

Holiday Homework- Summer vacation

Physics

1. Define charge. Write its SI unit. Is it a scalar or vector? Write 4 main properties of charges.
2. Define electric field & electric field intensity. What is the magnitude of electric field at a point where a charge of 0.1 mC experiences a force of 50N.
3. Deduce an expression for electric field at an axial point of an electric dipole of dipole moment $\vec{P}$.
4. Deduce an expression for the torque on an electric dipole of dipole moment $\vec{P}$ kept in an external electric field $\vec{E}$. When will it be (i) maximum and (ii) minimum?
5. Use Gauss's law to find electric field due to an infinite straight wire of linear charge density λ.
6. Define electric potential. Write its SI unit. Is it a scalar or vector quantity?
7. Deduce an expression for electric potential at a distance r from a point charge q.
8. Find electric potential at a distance of 6 cm from a point charge of 5 nC.

SUMMER VACATION HOLIDAY HOME WORK

SUB – MATHS

CLASS – XII

(1) Demonstrate the application of matrices in various field of life by using Power point Presentation.

(2) Make a project to draw the graph of $\sin^{-1} x$, using the graph of sin x and demonstrate the concept

of mirror reflection (about the line $y = x$) by using cardboard, white chart paper, ruler, coloured

pens, adhesive, pencil, eraser, cutter, nails and thin wires.

(3) Identify any five relations among the people of your colony and test the reflexivity,

symmetricity and transitivity of each relations

कक्षा बारहवी विषय हिंदी

1 **निम्नलिखित व्याकरण सम्बंभी प्रश्नो के उत्तर ध्यानपूर्वक 2 बार** लिखो ।

क भक्तिन अपना वास्तविक नाम लोगों से क्यों छुपाती थी? भक्तिन को यह नाम किसने और क्यों दिया होगा?

ख बच्चे किस बात की आशा में नीड़ों से झाँक रहे होंगे?

ग जहाँ पर दाना रहते हैं, वहीं नादान भी होते हैं' – कवि ने ऐसा क्यों कहा होगा?

घ लेखन क्या है
ड औपचारिक पत्र और अनोपचारिक पत्र में अंतर स्पस्ट कीजिए।
2 हरिवंश राय बच्चन का जीवन परिचय लिखो चित्र भी बनाओ
3 भक्तिन पाठ की लेखिका महादेवी वर्मा का जीवन परिचय लिखो चित्र भी बनाओ
4 आपके घर के आस पास गंदगी रहती सफाई करवाने के लिए नगर निगम अधिकारी को पत्र लिखो 2
. बार

Holiday Homework

Subject- English Class – XII

A. My Mother at Sixty Six

Answer the following questions-

1. Note down the central idea of the poem "My Mother at Sixty Six".
2. Describe the poetic devices used in the poem.

B. The Last Lesson:

Long Questions:

1. Describe M. Hamel's last day at school.
2. What feelings and experiences did Franz have on the day of last lesson?
3. Write a paragraph of about 100 words arguing for or against having to study three languages at school.
4. Have you ever changed your opinion about someone or something that you had earlier liked or disliked? Narrate what led you to change your mind.

C. The Third Level:

1. Sam's letter to Charley in s fine blend of reality and fantasy. Comment.
2. What was the third level like.? How did Charley know he had bumped into the past?

D. Notice Writing:

1. You have found an expensive geometry box in the school playground. Draft a notice in not more than 50 words for the school notice board. You are Ra'Rani, Class XII, Angel School, Faridabad.
2. You are Srinivas Srinidhi of D.P. Public School, Nagpur. As Student Editor of your school magazine, draft notice in not more than 50 words for your school notice board inviting article sketches from students of all classes.
3. Your school has planned an excursion to Lonavala near Mumbai during the autumn holidays. Write a notice in not more than 50 words for your school notice board, giving detailed information and inviting the names of those who are desirous to join. Sign as Naresh/Namita, Head Boy/Head Girl, D.V. English School, Thane, Mumbai.
4. You lost your Titan wrist-watch in your school. Draft a notice, in not more than 50 words, to be placed on your school notice board. You are a student of Class XII of Rani Ahalya Devi Senior Secondary School, Gwalior. Sign as Rani/Ram.

KENDRIYA VIDYALAYA NHPC GERUKAMUKH
SUMMER HOLIDAY HOMEWORK 2021-22
SUBJECT COMPUTER
CLASS XII

Activity 1: The project has to be developed in python language on the following Topics .

- **Quiz Games**

The project requires

- Presentation on the computer

_ Project report (Listing, Sample, Outputs, Documentation)

The aim of the project is to highlight the abilities of algorithmic formulation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development.

Students are required to submit the softcopy in google classroom.

<u>CONTENTS OF PROJECT REPORT</u>

- **AIM**
- **ACKNOWLEDGEMENT**
- **CERTIFICATE**
- **CONTENTS/INDEX**
- **PROJECT DESCRIPTION**
- **H/W REQUIREMENTS**
- **S/W REQUIREMENTS**
- **INPUT/OUTPUT SCREEN FORMATS**
- **CODING**
- **BIBLIOGRAPHY**
- **SCOPE**

Activity 2:

Assignment 1, 2, 3, & 4 Already given in Google Classroom.