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**Max Time : 2 hr** **Class = 12th Chemistry Test**  **Max Marks : 50**

**SOLUTION + BIOMOLECULES + HALOALKANES & HALOARENES**

1. Multiple choice questions : [ 1 X 15 = 15 ]
2. Identify the law which states that :

‘For any solution, the partial vapour pressure of each volatile component is directly proportional to its mole fraction’.

|  |  |  |  |
| --- | --- | --- | --- |
| a) henry’s law | b) Raoult’s law | c) Dalton’s law | d) Gay-Lussac’s law |

1. Which of the following has the highest melting point?

|  |  |
| --- | --- |
| a) o-dichlorobenzene | b) m-dichlorobenzene |
| c) p-dichlorobenzene | d) All have same melting point |

1. In the ring structure of glucose, the anomeric carbon is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) C – 2 | b) C – 3 | c) C – 4 | d) C – 1 |

1. An azeotropic solution of two liquids has a boiling point higher than either of the two when, it :

|  |  |
| --- | --- |
| a) shows negative deviation from Raoult’s law | b) shows positive deviation from Raoult’s law |
| c) is saturated | d) Shows no deviation from Raoult’s law. |

1. Inversion of configuration occurs in :

|  |  |
| --- | --- |
| a) SN 2 reaction | b) SN 1 reaction |
| c) Neither SN 1 nor SN 2 reaction | d) SN 1 As well as SN 2 reaction |

1. A vitamin which plays a vital role in the clotting of blood is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Vitamin A | b) Vitamin K | c) Vitamin D | d) Vitamin B |

1. IUPAC name of iso-butyl bromide is :

|  |  |
| --- | --- |
| a) 1 – bromo – 3 – methyl butane | b) 3 – bromo – 2 – methyl propane |
| c) 2 – bromo – 2 – methyl propane | d) 1 – bromo – 2 – methyl propane |

1. A compound CaCl2.6H2O undergoes complete dissociation in water. The Van’t Hoff factor ‘i’ is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 9 | b) 6 | c) 3 | d) 4 |

1. – plated sheet structure in proteins referred to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) primary structure | b) Secondary structure | c) tertiary structure | d) Quaternary structure |

1. Iso-propyl bromide on Wurtz reaction gives :

|  |  |
| --- | --- |
| a) Hexane | b) Propane |
| c) 2, 3 – dimethylbutane | d) neo – hexane |

1. Which of the following solution will have highest boiling point:

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1.0 M KCl | b) 1.0 M K2SO4 | c) 2.0 M KCl | d) 2.0 M K2SO4 |

1. Which one is the most reactive towards SN 1 reaction?

|  |  |
| --- | --- |
| a) C6H5 CH2  Br | b) C6H5 CH (C6H5) Br |
| c) C6H5 CH (CH3) Br | d) C6H5 C (CH3) C6H5 Br |

1. Which has the least freezing point?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 % sucrose | b) 1 % NaCl | c) 1 % CaCl2 | d) 1 % Glucose |

1. The deficiency of which of the following vitamins causes Scurvy?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Vitamin A | b) Vitamin B6 | c) Vitamin C | d) Vitamin B12 |

1. Major product obtained on reaction of 3 – phenylpropene with HBr in presence of organic peroxide.

|  |  |
| --- | --- |
| a) 3 – phenyl – 1 – bromopropane | b) 1 – phenyl – 3 – bromopropane |
| c) 1 – phenyl – 2 – bromopropane | d) 3 – phenyl – 2 – bromopropane |

**Two marks questions [ 2 x 5 = 10 ]**

1. Predict the major product formed when sodium ethoxide react with tert-butyl chloride.
2. Write the product obtained when D-glucose reacts with H2N – OH and Conc. HNO3.

Or

What are nucleic acids? Why two strands in DNA are not identical but are complementary.

1. Calculate the molality of ethanol solution in which the mole fraction of water is 0.88.
2. Define the following terms : (a) Isotonic solution (b) Van’t Hoff Factor
3. Explain the following reaction with an example : Friedel – Crafts Reaction.

**Three marks questions [ 3 x 5 = 15 ]**

1. Write the structure of product when D – Glucose is treated with the following reagents :

(a) HI (b) Br2 water (c) HCN

1. Answer the following questions :
2. Haloalkanes easily dissolved in organic solvents. Why?
3. What is the racemic mixture. Give an example.
4. Out of the two bromo derivates ; **C6H5 CH (CH3) Br** and **C6H5 CH (C6H5) Br** ; which one is more reactive towards SN 1 substitution reaction and why?
5. Give reason for the following observations :
6. Pentaacetate of glucose does not react with hydroxylamine.
7. Amino acids behave like salts.
8. Water soluble vitamins must be taken regularly in diet.
9. What happens when :
10. A pressure is greater than osmotic pressure is applied on the solution side separated from solvent by a semipermeable membrane?
11. Acetone is added to pure ethanol.

Or

A solution of glucose in water is labelled as 10 %. What would be the molality and molarity of the solution. (density of solution = 1.2 g/mL).

1. Enumerate the reaction of D – Glucose which cannot be explained by the open chain structure.

**Five marks questions [ 5 x 2 = 10 ]**

1. (a) What is meant by negative deviation from Raoult’s law? Give an example. What is the sign of for

positive deviation?

(b) Calculate the freezing point of the solution containing 0.5 g KCl (molar mass = 74.5 g/mol) dissolved in 100 g of water, assuming KCl to be 92 % ionized. (Kf = 1.86 K kg/mol)

1. (a) Differentiate between Fibrous and Globular structure of protein.

(b) Write the structure of the following organic halogen compounds :

(i) 2 – chloro – 3 – methylpentane (ii) 2 – bromobutane

(iii) 1 – bromo – 4 – sec. butyl – 2 - methylbenzene

Or

(a) Define Ebullioscopic constant and write its unit.

(b) Explain Hoffmann ammonolysis with suitable example