**R.L. Institute CODE : A**

**Class : 12th**

**Max Time : 90 minutes Subject : Chemistry Max Marks : 40**

**Marks Obtained : ………… September Exam Name : ……………………**

1. H2S is a toxic gas used in qualitative analysis. If solubility of H2S in water at STP is 0.195 m, what is the value of KH ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 0.0263 bar | b) 69.16 bar | c) 192 bar | d) 282 bar |

1. The preservation of meat by salting and of fruits by adding sugar protects them from bacterial action because

a) bacteria die of eating sugar or salt

b) due to osmosis bacteria lose water on salted meat or candid fruit and die

c) due to osmosis bacteria gain water on salted meat or candid fruit and die

d) bacteria get stuck to the salt and sugar layers and die

1. Which of the following is most reactive towards aqueous NaOH ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) C6H5Cl | b) C6H5CH2Cl | c) C6H5Br | d) BrC6H4Br |

1. Methyl bromide reacts with AgF to give methyl fluoride and silver bromide. This reaction is called

|  |  |  |  |
| --- | --- | --- | --- |
| a) Fitting reaction | b) Swarts reaction | c) Wurtz reaction | d) Finkelstein reaction |

1. The alkyl halide is converted into an alcohol by

|  |  |  |  |
| --- | --- | --- | --- |
| a) elimination | b) dehydrohalogenation | c) addition | d) substitution |

1. An alkyl halide, RX reacts with KCN to give propane nitrile. RX is

|  |  |  |  |
| --- | --- | --- | --- |
| a) C3H7Br | b) C4H9Br | c) C2H5Br | d) C5H11Br |

1. Which set of characteristics of ZnS crystal is correct ?

a) coordination number (4 : 4) ; ccp ; Zn­2+ ions in the alternate tetrahedral voids.

b) coordination number (6 : 6) ; hcp ; Zn­2+ ions in tetrahedral voids.

c) coordination number (6 : 6) ; hcp ; Zn­2+ ions in all octahedral voids.

d) coordination number (4 : 4) ; ccp ; Zn­2+ ions in all tetrahedral voids.

1. Total volume of atoms present in a fcc unit cell of a metal with radius ‘r ’ is

|  |  |  |  |
| --- | --- | --- | --- |
| a) r3 | b) r3 | c) r3 | d) r3 |

1. What type of crystal defect is shown in the given figure ?

Na+ Cl – Na+ Cl – Na+

Cl – ⃝ Cl – Na+ Cl –

Na+ Cl – Na+ ⃝ Na+

Cl – Na+ ⃝ Cl – ⃝

Na+ Cl – Na+ Cl – Na+

|  |  |  |  |
| --- | --- | --- | --- |
| a) Frenkel defect | b) Schottky defect | c) Interstitial defect | d) Cation excess defect |

1. Which of the following solutions shows positive deviation from Raoult’s law ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Acetone + Aniline | b) Acetone + ethanol | c) Water + Nitric acid | d) Chloroform + Benzene |

1. Suppose the radius of an atom of an element is 75 pm and the lattice type is body centered cubic, what is the edge length of the unit cell ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 173.2 pm | b) 137.2 pm | c) 123.7 pm | d) 153.2 pm |

1. An unripe mango placed in a concentrated salt solution to prepare pickle, shrivels because ….… .

|  |  |
| --- | --- |
| a) It gains water due to osmosis | b) It loses water due to reverse osmosis |
| c) It gains water due to reverse osmosis | d) It loses water due to osmosis |

1. Which of the following alkyl halide has maximum density ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) C3H7I | b) C2H5I | c) CH3Br | d) CH3I |

1. Chlorination of toluene in the presence of light and heat followed by treatment with aq. NaOH gives

|  |  |
| --- | --- |
| a) o-cresol | b) p-cresol |
| c) mixture of o-cresol and p-cresol | d) benzoic acid |

1. Which is the correct increasing order of boiling point of the following compounds ?

1 – iodobutane , 1 – bromobutane , 1 – chlorobutane , Butane

a) Butane < 1 – chlorobutane < 1 – bromobutane < 1 – iodobutane

b) 1 – iodobutane < 1 – bromobutane < 1 – chlorobutane < Butane

c) Butane < 1 – iodobutane < 1 – bromobutane < 1 – chlorobutane

d) Butane < 1 – chlorobutane < 1 – iodobutane < 1 – bromobutane

1. What is obtained from the aqueous (water) decomposition of inulin ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Glucose | b) Fructose | c) Glucose & Fructose | d) Lactose |

1. Helical structure of protein is stabilized by

|  |  |  |  |
| --- | --- | --- | --- |
| a) ionic bond | b) covalent bond | c) H-bonding | d) vander Waal’s forces |

1. Which structure of protein remain intact during denaturation process ?

|  |  |
| --- | --- |
| a) Both secondary and tertiary structures | b) Primary structure only |
| c) Secondary structure only | d) Tertiary structure only |

1. A metal crystallizes into a lattice containing a sequence of layers as AB AB AB …….. . What percentage of void are left in the lattice ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 72 % | b) 48 % | c) 26 % | d) 32 % |

1. The edge length of sodium chloride unit cell is 564 pm. If the size of Cl – ion is 181 pm. The size of Na+ ion will be

|  |  |  |  |
| --- | --- | --- | --- |
| a) 101 pm | b) 181 pm | c) 410 pm | d) 202 pm |

1. Proteins are condensation polymers of

|  |  |  |  |
| --- | --- | --- | --- |
| a) -amino acids | b) -amino acids | c) -hydroxy acids | d) -hydroxy acids |

1. Which of the following biomolecules simply refers to as “staff of life” ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lipids | b) Proteins | c) Vitamins | d) Carbohydrates |

1. Which of the following groups is simplest form of carbohydrates ?

|  |  |
| --- | --- |
| a) carboxyl groups | b) Aldehyde and ketone group |
| c) Alcohol and carboxyl group | d) Hydroxyl groups and hydrogen groups |

1. Zinc oxide loses electrons on heating according to the reaction ,

ZnO Zn2+ + O2 + 2 e – , It becomes yellow on heating because

a) Zn2+ ions and electrons move to interstitial sites and F-centres are created

b) Oxygen and electrons move out of the crystal and ions become yellow

c) Zn2+ again combine with oxygen to give yellow oxide

d) Zn2+ are replaced by oxygen.

1. Which exists as Zwitterion ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Urea | b) Acetic acid | c) Glycine | d) Aniline hydrochloride |

1. A solution containing 12.5 g of non-electrolyte substance in 185 g of water shows boiling point elevation of 0.80 K . Calculate the molar mass of the substance (Kb = 0.52 K Kg mol-1)

|  |  |  |  |
| --- | --- | --- | --- |
| a) 53.06 g mol-1 | b) 25.3 g mol-1 | c) 16.08 g mol-1 | d) 43.92 g mol-1 |

1. A plant shrink when it is kept in a

|  |  |  |  |
| --- | --- | --- | --- |
| a) hypotonic solution | b) hypertonic solution | c) Isotonic solution | d) pure water |

1. Which of the following crystals does not exhibit Frenkel defect ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) AgBr | b) AgCl | c) KBr | d) ZnS |

1. The ease of dehydrohalogenation of alkyl halide with alcoholic KOH is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 3˚ < 2˚ < 1˚ | b) 3˚ > 2˚ > 1˚ | c) 3˚ < 2˚ > 1˚ | d) 3˚ > 2˚ < 1˚ |

1. In SN2 reactions the sequence of bond breaking and bond formation is as follows

a) bond breaking is followed by formation

b) bond formation is followed by breaking

c) bond breaking and formation occur simultaneously

d) bond breaking and formation take place randomly.

1. If 1 g of solute (molar mass = 50 g mol-1) is dissolved in 50 g of solvent and the elevation in boiling point is 1 K . The molar boiling constant of the solvent is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 | b) 3 | c) 2.5 | d) 5 |

**Assertion-Reason Based MCQs**

**DIRECTIONS :** In each of the following questions, a statement of Assertion (A) is followed by a statement of Reason (R) is given . Choose the correct answer out of the following choices :

1. Both assertion and reason are true, and reason is correct explanation of the assertion.
2. Both assertion and reason are true, but reason is not the correct explanation of the assertion.
3. Assertion is true, but reason is false.
4. Assertion is false, but reason is true.
5. **Assertion:** People taking a lot of salty food experience the puffiness or swelling, called edema

**Reason:** There is water retention in tissue cells and intercellular spaces because of osmosis .

1. **Assertion:** Diamond and graphite do not have the same covalent structure.

**Reason:** Silicon carbide is typical example of network solid.

1. **Assertion:** 1˚ allylic halides show higher reactivity in SN1 reactions than other 1˚ alkyl halides.

**Reason:** Intermediate carbocation is stabilized by resonance.

1. **Assertion:** SN1 reaction is carried out in the presence of polar protic solvent.

**Reason:** A polar protic solvent decreases the stability of carbocation due to solvation

1. **Assertion:** In both DNA and RNA , heterocyclic base and phosphate ester linkages are at C-1’ and C-5’ respectively of the sugar molecule

**Reason:** Nucleotides and nucleosides mainly differ from each other in presence of phosphate units.

**CASE STUDY TYPE**

Read the passage given below and answer the following questions from 37 to 40 .

Coins of diameter 10 mm each are to be placed on a flat surface bounded by four lines of length 40 mm each in such a way that center of coin must not lie outside the specified area. All the coins must form only one layer. Two different arrangements are possible for arranging these coins. In first arrangement, each coin is touched by four neighbouring coins (Arrangement A). In second arrangement, each coin is touched by six neighbouring coins (Arrangement B).

1. How many maximum coins can be placed on the surface bounded by four lines ?
2. What will be the radius of largest coin, that can be placed on vacant surface in arrangement B, without disturbing other coins ?
3. What will be the radius of largest coin, that can be placed on vacant surface in arrangement A, without disturbing other coins ?
4. What will be maximum number of coins per m2 if coins of diameter 10 mm are placed on a large flat surface ?

**R.L. Institute CODE : B**

**Class : 12th**

**Max Time : 90 minutes Subject : Chemistry Max Marks : 40**

**Marks Obtained : ………… September Exam Name : ……………………**

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| --- | --- | --- | --- |
| a) ionic bond | b) covalent bond | c) H-bonding | d) vander Waal’s forces |

1. Proteins are condensation polymers of

|  |  |  |  |
| --- | --- | --- | --- |
| a) -amino acids | b) -amino acids | c) -hydroxy acids | d) -hydroxy acids |

1. Which of the following biomolecules simply refers to as “staff of life” ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lipids | b) Proteins | c) Vitamins | d) Carbohydrates |

**Assertion-Reason Based MCQs**

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**Reason:** Intermediate carbocation is stabilized by resonance.

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1. What will be the radius of largest coin, that can be placed on vacant surface in arrangement A, without disturbing other coins ?
2. What will be the radius of largest coin, that can be placed on vacant surface in arrangement B, without disturbing other coins ?
3. What will be maximum number of coins per m2 if coins of diameter 10 mm are placed on a large flat surface ?
4. How many maximum coins can be placed on the surface bounded by four lines ?

**Answers September Exam Term-1 [CLASS = 12th ]**

|  |  |
| --- | --- |
| **CODE : A** | **CODE : B** |
| 1. d | 1. b |
| 2. b | 2. a |
| 3. b | 3. c |
| 4. b | 4. c |
| 5. d | 5. b |
| 6. c | 6. c |
| 7. a | 7. a |
| 8. b | 8. c |
| 9. b | 9. c |
| 10. b | 10. b |
| 11. a | 11. d |
| 12. d | 12. b |
| 13. d | 13. d |
| 14. c | 14. a |
| 15. a | 15. d |
| 16. b | 16. b |
| 17. c | 17. d |
| 18. b | 18. a |
| 19. c | 19. a |
| 20. a | 20. d |
| 21. a | 21. b |
| 22. d | 22. c |
| 23. b | 23. c |
| 24. a | 24. b |
| 25. c | 25. b |
| 26. d | 26. b |
| 27. b | 27. b |
| 28. c | 28. b |
| 29. b | 29. c |
| 30. c | 30. a |
| 31. c | 31. d |
| 32. a | 32. a |
| 33. b | 33. b |
| 34. a | 34. b |
| 35. c | 35. a |
| 36. b | 36. c |
| 37. 25 | 37. 2.07 |
| 38. 0.775 | 38. 0.775 |
| 39. 2.07 | 39. 1.56 x 104 |
| 40. 1.56 x 104 | 40. 25 |