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| **CLASS REVISION TEST-01****CHEMISTRY** |
| **EX.NO**  |  | **AD.NO** |  | **GRADE**  | **XII** |
| **DATE**  | **05/12/19** | **MARKS** | **70** | **TIME** | **3 Hrs** |

**I. Choose the correct answer/Answer in a word/Assertion Reason/True or False:- 20x1=20**

1. The molality of pure water is

 a. 55.5 b. 50.5 c. 18 d. 60.5

2. 4L of 0.02 M aqueous solution of NaCl was diluted by adding one litre of water. The molality of the resultant solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 a. 0.004 b. 0.008 c. 0.012 d. 0.016

3. 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

4. Which of the following statements is false?

a. Two different solutions of sucrose of same molality prepared in different solvents will have the same depression in freezing point.

b. The osmotic pressure of a solution is given by the equation  = CRT (where, C is the molarity of the solution)

c. Decreasing order of osmotic pressure for 0.01 M aqueous solutions of barium chloride, potassium chloride, acetic acid and sucrose is BaCI2 > KCI > CH3COOH > sucrose

d. According to Raoult's law, the vapour pressure exerted by a volatile component of a solution is directly proportional to its mole fraction in the solution

5. A conductivity cell containing electrodes made up of

 a. Gold b. Silver c. Platinised platinum d. Copper

6. While charging the lead storage battery \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 a. PbSO4 anode is reduced to Pb b. PbSO4 cathode is reduced to Pb
 c. PbSO4 cathode is oxidized to Pb d. PbSO4 anode is oxidized to PbO2

7. Match the terms given in Column I with the units given in Column II.

 **Column I Column II**

 a.$Λ$m i. S cm-1

 b. ECell ii. m-1

c. *k* iii. S cm2 mol-1

 d. G\* iv. V

8. Match the items of Column I and Column II.

 **Column I Column II**

 a. Lead storage battery i. maximum efficiency

 b. Mercury cell ii. prevented by galvanization

 c. Fuel cell iii. Gives steady potential

 d. Rusting iv. Pb is anode, PbO2 is cathode

**In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as: (Q.no 9 - Q.no12 )**

a. If both assertion and reason are true and reason is the correct explanation of assertion.

b. If both assertion and reason are true but reason is not the correct explanation of assertion.

c. If assertion is true but reason is false.

d. If both assertion and reason are false.

9. Assertion : Order of the reaction can be zero or fractional.

 Reason : We cannot determine order from balanced chemical equation.

10. Assertion : Order and molecularity are same.

 Reason : Order is determined experimentally and molecularity is the sum of the stoichiometric coefficient of rate determining elementary step.

11. Assertion : $Λ$m for weak electrolytes shows a sharp increase when the electrolytic solution is diluted.

 Reason : For weak electrolytes degree of dissociation increases with dilution of solution.

12. Assertion : For measuring resistance of an ionic solution an AC source is used.

 Reason : Concentration of ionic solution will change if DC source is used.

13&14. Match the items given in Column I and Column II.

 **Column I Column II**

 a. Protective colloid i. FeCl3 + NaOH

 b. Liquid – liquid colloid ii. Lyophilic colloids

 c. Positively charged colloid iii. Emulsion

 d. Negatively charged colloid iv. FeCl3 + hot water

15&16. Match the types of colloidal systems given in Column I with the name given in Column II.

 **Column I Column II**

 a. Solid in liquid i. Foam

 b. Liquid in solid ii. Sol

 c. Liquid in liquid iii. Gel

 d. Gas in liquid iv. Emulsion

17. If *t*1/2 of first order and zero order are same. Then the ratio of the initial rates of first order recation to the zero order reaction is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**True or False:- (Q.no18 –Q. no 20)**

18. SN1(substitution nucleophilic reaction) in Tertiary halide is bimolecular but order is 1.

19. SN1(substitution nucleophilic reaction) in Primary halide is bimolecular and order is 2.

20. *t*1/2 is inversely proportional to initial concentration in zero order reaction.

**II. Short answer type questions(Type I):- 7x2=14**

21. State Raoult’s law for a solution containing volatile components. How does Raoult’s law become a special case of Henry’s Law?

22. Some ethylene glycol, HOCH2 CH2OH is added to your car’s cooling system along with 5 kg of water. If the freezing point of water glycol solution is -15°C, what is the boiling point of the solution?

 [Kb = 0.52 K kg mol-1, K*f* = 1.86 K kg mol-1].

23. Zinc rod is dipped in 0.1 M solution of ZnSO4. The salt is 95% dissociated at this dilution at 298 K.

 Given $E\_{Zn^{2+}/Zn}^{°}$ = -0.76 V.

24. The conductivity of 0.001 M acetic acid is 4 x 10-5 S cm-1. Calculate the dissociation constant of an acid, if molar conductivity at infinite dilution for acetic acid is 390 S cm2 mol-1.

25. Define:

 i. Average rate ii. Instantaneous Rate

26. For a certain chemical reaction variation in concentration [A] vs. time (t) plot is given below:

 

(i) Predict the order of the given reaction?

(ii) What does the slope of the line and intercept indicate?

(iii) What is the unit of rate constant k?

27. What is shape-selective catalysis?

**III. Short answer type questions(Type II):- 7x3=21**

28. Give reasons for the following observations:

 i. Physisorption decreases with increase in temperature.

 ii. Addition of alum purifies the water.

 iii. Brownian movement provides stability to the colloidal solution.

29. a. What are the two types of emulsions and how do they differ from one another? Give one example of each.

 b. Which one of the following electrolytes is most effective for the coagulation of Fe(OH)3 sol and why?

30. The activation energy of a reaction is 75.24 kJ mol-1 in the absence of a catalyst and 50.14 kJ mol-1 with a catalyst. How many times will the rate of reaction grow in the presence of the catalyst if the reaction proceeds at 25°C? (R = 8.314 J K-1 mol-1).

31. A first order reaction takes 100 minutes for completion of 60% of the reaction. Find the time when 90% of the reaction will be completed.

32. One half-cell in a voltaic cell is constructed from a silver wire dipped in silver nitrate solution of unknown concentration. The other half-cell consists of a zinc electrode in a 0.1 M solution of Zn (NO3)2. A voltage of 1.48 V is measured for this cell. Use this information to calculate the concentration of silver nitrate solution.

 

33. i. Write two advantages of H2­ O2 fuel cell over ordinary cell.

 ii. Equilibrium constant (Kc) for the given cell reaction is 10. Calculate $E\_{Cell}^{°}$.

 A(s) + B2+ (aq) $⇌$ A2+ (aq) + B (s)

34. At 25°C the saturated vapour pressure of water is 3.165 kPa (23.75 mm Hg). Find the saturated vapour pressure of a 5% aqueous solution of urea (carbamide) at the same temperature.

 (Molar mass of urea = 60.05 g mol-1).

**IV. Long answer type questions:- 3x5=15**

35. i. a. A sample of water was found to contain dissolved oxygen (O2) to the extent of 5 ppm and hardness due to Mg2+ is 15 ppm. Calculate the amount of O2 and number of Mg2+ in 1 litre of water (density of water = 1g/mL).

 b. What volume of 98% sulphuric acid (d = 1.84 g cm-3) and what mass of water must be required to prepare 500 cm3 of 15% solution of H2SO4 (d = 1.10 g cm-3)? [H = 1, S = 32, O = 16 u]

 ii. a. Explain why a solution of chloroform and acetone shows negative deviation from Raoult’s law.

 b. Phenol associates in benzene to certain extent to form a dimer. A solution containing 20 g of phenol in 1.0 kg of benzene has its freezing point lowered by 0.69 K. Calculate the fraction of phenol that has dimerised. [Given K*f* for benzene = 5.1Km-1]

36. i. a. Define the term conductivity and molar conductivity of the solution of an electrolyte. Comment on its variation with temperature.

 b. The measured resistance of conductivity cell was 100 ohms. If 7.45 g of KCl is dissolved per litre of solution. Calculate (i) specific conductance

 (ii) molar conductance. [$\frac{l}{A}$ = 1.25 cm-1, Molar mass of KCl is 74.5 g mol-1].

ii. a. A cell is prepared by dipping a zinc rod in 1M zinc sulphate solution and a silver electrode in 1M silver nitrate solution. The standard electrode potential given:

 $ E\_{Zn^{2+}/Zn}^{°}$= - 0.76 V, $E\_{Ag^{+}/Ag}^{°}$= + 0.80 V

 What is the effect of increase in concentration of Zn2+ on the Ecell?

 b. Write the products of electrolysis of aqueous solution of NaCl with platinum electrodes.

 c. Calculate e.m.f. of the following cell at 298 K:

Ni(s) l Ni2+ (0.01 M) ll Cu2+ (0.1M) l Cu(s)

 [ Given $ E\_{Ni^{2+}/Ni}^{°}$= - 0.25 V, $E\_{Cu^{2+}/Cu}^{°}$= + 0.34 V]

37. i. a. For the reaction 2N2O5(g) 4NO2(g) + O2 (g), the rate of formation of NO2(g) is

 2.8 x 10-3 M s-1. Calculate the rate of disappearance of N2O5(g).

 b. The rate of a reaction increases four times when the temperature changes from 300 K to 320 K.

 Calculate the energy of activation of the reaction, assuming that it does not change with temperature.

 ii. Hydrogen peroxide, H2O2(aq) decomposes to H2O(*l*) and O2(g) in a reaction that is of first order in H2O2 and has a rate constant, *k* = 1.06 x 10-3 min-1.

 a. How long will it take 15% of a sample of H2O2 to decompose?

 b. How long will it take 85% of a sample of H2O2 to decompose?