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| **UT/CHAK/1223/B 02-NOV-2023** | | | | | |
| **UNIT TEST-2 (2023-24)** | | | | | |
| **Subject: CHEMISTRY**  **Grade: XII** | | Max. Marks:50Time: 2.5Hrs | | | |
|  | **SECTION A** | | | |
| 1 | (a) (CH3 )2 NH | | 1 |
| 2 |  | | 1 |
| 3 | (a) IO3 - | | 1 |
| 4 | (a) 0.1773 | | 1 |
| 5 |  | | 1 |
| 6 | (b) 251.5 | | 1 |
| 7 | (c) nearly same atomic size | | 1 |
| 8 | (a) a straight line | | 1 |
|  | Question number 9-10 are Assertion-Reason based questions: Note : In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.  A) Both assertion and reason are true, and reason is the correct explanation of the assertion.  B) Both assertion and reason are true but reason is not the correct explanation of assertion.  C) Assertion is true but reason is not true.  D) Assertion is not true but reason is true. | |  |
| 9 | A) Both assertion and reason are true, and reason is the correct explanation of the assertion. | | 1 |
| 10 | C) Assertion is true but reason is not true. | | 1 |
|  | **SECTION B** | |  |
| 11 | 1. Zero order 2. Order = ½ + 2 = 2.5 | | 2 |
| 12 | Give a chemical test to distinguish between the following pairs:   1. HNO2 test: aniline on treatment with NaNo 2 and HCL followed by phenol gives an orange colour azo dye whereas benzylamine produces bubbles of nitrogen gas. Equation 2. secondary amines on treatment with benzene sulfonyl chloride forms of product that is insoluble in alkali whereas tertiary amines do not react with the hinsberg reagent. Equation | | 2 |
| 13 | Arrange the following compounds in increasing order of their property as indicated:   1. (CH3)2CHCOOH< CH3CH2CH2COOH< CH3CH(Br)CH2COOH< CH3CH2CH(Br)COOH (acid strength) 2. Methoxybenzoic acid <Benzoic acid< 4-Nitrobenzoic acid< 3,4-Dinitrobenzoic acid (acid strength) | | 2 |
| 14 | 1. The limiting molar conductivity of an electrolyte can be represented as the sum of the individual contributions of the anion and cation of the electrolyte. 2. Λº m for CH3 COOH = Λº m(HCl) + Λº m (CH3COO-) - Λº m (NaCl)=91 + 425.9 – 126.4 = 389.7 S cm2 mol- | | 2 |
| 15 | Complete the equations : | | 2 |
| 16 | H2 – O2 fuel cell.  Advantages : i) greater efficiency (70%) ii) pollution free | | 2 |
|  | **SECTION C** | |  |
| 17 |  | | 3 |
| 18 | Account for the following observations:   1. Methylamine solution in water furnishes OH- ions which reacts with ferric chloride solution to give a precipitate of ferric hydroxide. 2. The NH2 group in Aniline is a strong benzene ring activator as a result it readily forms 2,4,6-tribromoaniline on reaction with bromine water 3. Diazonium salts of aromatic amines are more stable than those of aliphatic amines because they are stabilised through resonance. | | 3 |
| 19 | 2. This is because the lone pairs on Oxygen atom attached to Hydrogen atom in the −CO2​H are involved in resonance thereby making the carbon atom less electrophilic. 3. It forms alpha- chloropropanoic acid | | 3 |
| 20 |  | | 3 |
| 21 | Give the structures of A, B and C in the following reactions:   1. A(CH3CH2CN) ; B(CH3CH2CONH2) ; C (CH3CH2NH2) 2. A(C6H5CN) ; B (C6H5COOH) ; C (C6H5CONH2) 3. A (CH3CH2CN) ; B ( CH3CH2CH2NH2) ; C (CH3CH2CH2OH) | | 3 |
| 22 | 2. 2 CrO4 2– + 2H+ → Cr2O7 2– + H2O   Cr2O7 2– + 2 OH- → 2 CrO4 2– + H2O | | 3 |
|  | **SECTION D** | |  |
| 23 | 1. Order: it is the sum of the powers to which the concentration terms are raised in the rate equation Molecularity: it is the number of species( that must collide simultaneously in order to bring about a chemical reaction. 3. Zero order 4. Mol/L/s   (OR)  Slope= -k/2.303  K= 2.0x10-6 x 2.303 = 4.606 x 10 – 6 s-1           1. Reactions which appear to be of higher order but follow first order kinetics under special conditions are known as pseudo first order reactions. Example hydrolysis of Ester | | 5 |
| 24 | 1. Anode: PbSO4 + 2H2O 🡪 PbO2 + 4H+ + SO4 -2 + 2ē   Cathode PbSO4 + 2 ē 🡪 Pb + SO4 -2  Overall : 2 PbSO4 + 2H2O 🡪 Pb + PbO2 + 2H2SO4    (OR)   1. Anode: 2 Fe (s) ⎯→ 2 Fe2+ + 4 e–   Cathode: O2(g) + 4 H+ (aq) + 4 e– ⎯→ 2 H2O (l)  The overall reaction being: 2Fe(s)+O2(g) + 4H+ (aq) ⎯→ 2Fe2 +(aq)+ 2 H2O (l)  Atomospheric oxidation : 2Fe2+(aq) + 2H2O(l) + ½O2(g) → Fe2O3(s) + 4H+ (aq) | | 5 |

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