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|  | | | **R.V. College of Engineering**  **(*Autonomous Institute affiliated to VTU, Belagavi)***  **Department of Chemistry**  **Sub: Engineering Chemistry (16CH22)**  **II Semester, ‘G’ Section ‘EIE’ branch**  **Quiz-2 (Even semester)** | | | | | | | | | | | | | | | | | | | |
| **Date: 06/03/2017** | | | | | | |  |  |  | |  | | **Duration: 10 minutes** | | | | | | **Max Mark: 10** | | | |
| **Roll No.:** | |  | | | **Section:** | | | | **Name of the Student :** | | | | | | |  | | | **Signature:** | | | |
| **Q No** | | | 1 | 2 | | 3 | | | 4 | 5 | | 6 | | 7 | 8 | 9 | 10 | Version | Total Marks | Signature of Faculty | | |
| **Marks** | | |  |  | |  | | |  |  | |  | |  |  |  |  | **A** |  |  | | |
|  | | |  |  | |  | | |  |  | |  | |  |  |  |  |  |  |  |  |  |
| ***Instruction: Answer ALL the questions*** | | | | | | | | | | | | | | | | | | | |  |  |  |
| **Sl. No** | **Questions** | | | | | | | | | | | | | | | | | | | Marks | BT | CO |
| 1 | Write the Nernst' Equation for the following cell: M(s)/M2+(aq) // X3+(aq) /X (s). | | | | | | | | | | | | | | | | | | | 1 | L1 | 1 |
| 2 | Suggest a suitable organic additive, which can be used to decrease the ignition delay in diesel. | | | | | | | | | | | | | | | | | | | 1 | L2 | 2 |
| 3 | In potentiometric titration of FAS against acidified K2Cr2O7, the EMF doubles after the complete oxidation of Fe2+. Write the symbolic notation of a redox electrode which exists before the equivalence point. | | | | | | | | | | | | | | | | | | | 1 | L3 | 3 |
| 4 | The branched hydrocarbons show high octane number. Draw the structure of the standard hydrocarbon exhibits high octane number in octane number scale. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 5 | The glass electrode readings of alkaline water are not accurate after pH>10. Give reason. | | | | | | | | | | | | | | | | | | | 1 | L1,L2 | 1 |
| 6 | In the nerve cell membrane, by assuming the concentration of ***[K+]inside =120 mM***, and ***[K+]outside = 4.5 mM*** in semi permeable membrane at 37 ⁰C, Evaluate the Resting potential of the membrane using Nernst's Equation. | | | | | | | | | | | | | | | | | | | 1 | L4 | 4 |
| 7 | In a rechargeable Li ion battery, Li+ ions migrate from anode to cathode compartment during discharging. Write the overall reaction during discharging. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| 8 | In direct methanol-oxygen fuel cells, H2SO4 is preferred as an electrolyte instead of potassium hydroxide. Why? | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 9 | For the given galvanic cell: Cr(s) /Cr3+(aq) // I2 (s) /I-(aq) /Pt; give the equilibrium constant (Keq) expression. | | | | | | | | | | | | | | | | | | | 1 | L4,L5 | 4 |
| 10 | In the membrane technology for RO process, the membrane consists of polysulfone and polyurethane polymers. Write the structure of the polysulfone. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| **Course Outcomes (As per Bloom’s revised taxonomy)** | | | | | | | | | | | | | | | | | | | | | | |
| 1.      Understand the principles of Chemistry in Engineering (L1). | | | | | | | | | | | | | | | | | | | | | | |
| 2.      Applying the knowledge of Chemistry in solving societal problems related public health, safety and environmental issues (L2, L3). | | | | | | | | | | | | | | | | | | | | | | |
| 3.      Identify, analyze and interpret Engineering problems associated with chemistry to achieve solutions (L3, L4). | | | | | | | | | | | | | | | | | | | | | | |
| 4. Developing solutions for problems associated with water, fuel, corrosion, battery, nanomaterial and polymer technologies (L4). | | | | | | | | | | | | | | | | | | | | | | |

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|  | | | **R.V. College of Engineering**  **(*Autonomous Institute affiliated to VTU, Belagavi)***  **Department of Chemistry**  **Sub: Engineering Chemistry (16CH22)**  **II Semester, ‘G’ Section ‘EIE’ branch**  **Quiz-2 (Even semester)** | | | | | | | | | | | | | | | | | | | |
| **Date: 06/03/2017** | | | | | | |  |  |  | |  | | **Duration: 10 minutes** | | | | | | **Max Mark: 10** | | | |
| **Roll No.:** | |  | | | **Section:** | | | | **Name of the Student :** | | | | | | |  | | | **Signature:** | | | |
| **Q No** | | | 1 | 2 | | 3 | | | 4 | 5 | | 6 | | 7 | 8 | 9 | 10 | Version | Total Marks | Signature of Faculty | | |
| **Marks** | | |  |  | |  | | |  |  | |  | |  |  |  |  | **B** |  |  | | |
|  | | |  |  | |  | | |  |  | |  | |  |  |  |  |  |  |  |  |  |
| ***Instruction: Answer ALL the questions*** | | | | | | | | | | | | | | | | | | | |  |  |  |
| **Sl. No** | **Questions** | | | | | | | | | | | | | | | | | | | Marks | BT | CO |
| 1 | The glass electrode can't be used in water containing fluoride ion. Give reason. | | | | | | | | | | | | | | | | | | | 1 | L1 | 1 |
| 2 | In methanol-oxygen fuel cells, KOH can't be used as an electrolyte. Mention reason. | | | | | | | | | | | | | | | | | | | 1 | L2 | 2 |
| 3 | In a rechargeable Li ion battery, Li+ ions migrate from anode to cathode compartment during discharging. Write the overall reaction during charging. | | | | | | | | | | | | | | | | | | | 1 | L3 | 3 |
| 4 | Suggest a suitable eco-friendly additive, which can be used to increase the anti-knocking property in petrol. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 5 | Write the Nernst' Equation for the following cell: A(s)/A2+(aq) // M3+(aq) /M (s). | | | | | | | | | | | | | | | | | | | 1 | L1,L2 | 1 |
| 6 | For the given galvanic cell: Fe(s) /Fe2+(aq) // I2 (s) /I-(aq) /Pt; give the equilibrium constant (Keq) expression. | | | | | | | | | | | | | | | | | | | 1 | L4 | 4 |
| 7 | In potentiometric titration of FAS against acidified K2Cr2O7, the EMF doubles after the complete oxidation of Fe2+. Write the symbolic notation of a redox electrode which exists after the equivalence point. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| 8 | The aromatic hydrocarbons show low cetane number. Draw the structure of the standard hydrocarbon exhibits low cetane number in cetane number scale. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 9 | In the nerve cell membrane, by assuming the concentration of ***[K+]inside =120 mM***, and ***[K+]outside = 4.5 mM*** in semi permeable membrane at 37 ⁰C, Evaluate the Resting potential of the membrane using Nernst's Equation. | | | | | | | | | | | | | | | | | | | 1 | L4,L5 | 4 |
| 10 | In the membrane technology for RO process, the membrane consists of polysulfone and polyurethane polymers. Write the structure of the polyurethane. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| **Course Outcomes (As per Bloom’s revised taxonomy)** | | | | | | | | | | | | | | | | | | | | | | |
| 1.      Understand the principles of Chemistry in Engineering (L1). | | | | | | | | | | | | | | | | | | | | | | |
| 2.      Applying the knowledge of Chemistry in solving societal problems related public health, safety and environmental issues (L2, L3). | | | | | | | | | | | | | | | | | | | | | | |
| 3.      Identify, analyze and interpret Engineering problems associated with chemistry to achieve solutions (L3, L4). | | | | | | | | | | | | | | | | | | | | | | |
| 4. Developing solutions for problems associated with water, fuel, corrosion, battery, nanomaterial and polymer technologies (L4). | | | | | | | | | | | | | | | | | | | | | | |
|  | | | **R.V. College of Engineering**  **(*Autonomous Institute affiliated to VTU, Belagavi)***  **Department of Chemistry**  **Sub: Engineering Chemistry (16CH22)**  **II Semester, ‘G’ Section ‘EIE’ branch**  **Quiz-2 (Even semester)** | | | | | | | | | | | | | | | | | | | |
| **Date: 06/03/2017** | | | | | | |  |  |  | |  | | **Duration: 10 minutes** | | | | | | **Max Mark: 10** | | | |
| **Roll No.:** | |  | | | **Section:** | | | | **Name of the Student :** | | | | | | |  | | | **Signature:** | | | |
| **Q No** | | | 1 | 2 | | 3 | | | 4 | 5 | | 6 | | 7 | 8 | 9 | 10 | Version | Total Marks | Signature of Faculty | | |
| **Marks** | | |  |  | |  | | |  |  | |  | |  |  |  |  | **C** |  |  | | |
|  | | |  |  | |  | | |  |  | |  | |  |  |  |  |  |  |  |  |  |
| ***Instruction: Answer ALL the questions*** | | | | | | | | | | | | | | | | | | | |  |  |  |
| **Sl. No** | **Questions** | | | | | | | | | | | | | | | | | | | Marks | BT | CO |
| 1 | The glass electrode readings of alkaline water are not accurate after pH>10. Give reason. | | | | | | | | | | | | | | | | | | | 1 | L1 | 1 |
| 2 | The branched hydrocarbons show high octane number. Draw the structure of the standard hydrocarbon exhibits high octane number in octane number scale. | | | | | | | | | | | | | | | | | | | 1 | L2 | 2 |
| 3 | In the membrane technology for RO process, the membrane consists of polysulfone and polyurethane polymers. Write the structure of the polysulfone. | | | | | | | | | | | | | | | | | | | 1 | L3 | 3 |
| 4 | In direct methanol-oxygen fuel cells, H2SO4 is preferred as an electrolyte instead of potassium hydroxide. Why? | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 5 | Write the Nernst' Equation for the following cell: X(s)/X3+(aq) // G2+(aq) /G(s). | | | | | | | | | | | | | | | | | | | 1 | L1,L2 | 1 |
| 6 | For the given galvanic cell: Zn(s)/Zn2+ (aq) // Cl2 (g) /Cl- (aq) /Pt; give the equilibrium constant (Keq) expression. | | | | | | | | | | | | | | | | | | | 1 | L4 | 4 |
| 7 | In potentiometric titration of FAS against acidified K2Cr2O7, the EMF doubles after the complete oxidation of Fe2+. Write the symbolic notation of a redox electrode which exists before the equivalence point. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| 8 | Suggest a suitable additive, which can be used to decrease the ignition delay in diesel. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 9 | In the nerve cell membrane, by assuming the concentration of ***[K+]inside =120 mM***, and ***[K+]outside = 4.5 mM*** in semi permeable membrane at 37 ⁰C, Evaluate the Resting potential of the membrane using Nernst's Equation. | | | | | | | | | | | | | | | | | | | 1 | L4,L5 | 4 |
| 10 | In a rechargeable Li ion battery, Li+ ions migrate from anode to cathode compartment during discharging. Write the overall reaction during discharging. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| **Course Outcomes (As per Bloom’s revised taxonomy)** | | | | | | | | | | | | | | | | | | | | | | |
| 1.      Understand the principles of Chemistry in Engineering (L1). | | | | | | | | | | | | | | | | | | | | | | |
| 2.      Applying the knowledge of Chemistry in solving societal problems related public health, safety and environmental issues (L2, L3). | | | | | | | | | | | | | | | | | | | | | | |
| 3.      Identify, analyze and interpret Engineering problems associated with chemistry to achieve solutions (L3, L4). | | | | | | | | | | | | | | | | | | | | | | |
| 4. Developing solutions for problems associated with water, fuel, corrosion, battery, nanomaterial and polymer technologies (L4). | | | | | | | | | | | | | | | | | | | | | | |

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|  | | | **R.V. College of Engineering**  **(*Autonomous Institute affiliated to VTU, Belagavi)***  **Department of Chemistry**  **Sub: Engineering Chemistry (16CH22)**  **II Semester, ‘G’ Section ‘EIE’ branch**  **Quiz-2 (Even semester)** | | | | | | | | | | | | | | | | | | | |
| **Date: 06/03/2017** | | | | | | |  |  |  | |  | | **Duration: 10 minutes** | | | | | | **Max Mark: 10** | | | |
| **Roll No.:** | |  | | | **Section:** | | | | **Name of the Student :** | | | | | | |  | | | **Signature:** | | | |
| **Q No** | | | 1 | 2 | | 3 | | | 4 | 5 | | 6 | | 7 | 8 | 9 | 10 | Version | Total Marks | Signature of Faculty | | |
| **Marks** | | |  |  | |  | | |  |  | |  | |  |  |  |  | **D** |  |  | | |
|  | | |  |  | |  | | |  |  | |  | |  |  |  |  |  |  |  |  |  |
| ***Instruction: Answer ALL the questions*** | | | | | | | | | | | | | | | | | | | |  |  |  |
| **Sl. No** | **Questions** | | | | | | | | | | | | | | | | | | | Marks | BT | CO |
| 1 | Write the Nernst' Equation for the following cell: Q(s)/Q+(aq) // Z2+(aq) /Z (s). | | | | | | | | | | | | | | | | | | | 1 | L1 | 1 |
| 2 | In methanol-oxygen fuel cells, KOH can't be used as an electrolyte. Mention reason. | | | | | | | | | | | | | | | | | | | 1 | L2 | 2 |
| 3 | In a rechargeable Li ion battery, Li+ ions migrate from anode to cathode compartment during discharging. Write the overall reaction during charging. | | | | | | | | | | | | | | | | | | | 1 | L3 | 3 |
| 4 | Suggest a suitable eco-friendly additive, which can be used to increase the anti-knocking property in petrol. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 5 | The glass electrode can't be used in water containing fluoride ion. Give reason. | | | | | | | | | | | | | | | | | | | 1 | L1,L2 | 1 |
| 6 | In the nerve cell membrane, by assuming the concentration of ***[K+]inside =120 mM***, and ***[K+]outside = 4.5 mM*** in semi permeable membrane at 37 ⁰C, Evaluate the Resting potential of the membrane using Nernst's Equation. | | | | | | | | | | | | | | | | | | | 1 | L4 | 4 |
| 7 | In the membrane technology for RO process, the membrane consists of polysulfone and polyurethane polymers. Write the structure of the polyurethane. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| 8 | The aromatic hydrocarbons show low cetane number. Draw the structure of the standard hydrocarbon exhibits low cetane number in cetane number scale. | | | | | | | | | | | | | | | | | | | 1 | L2,L3 | 2 |
| 9 | For the given galvanic cell: Mg(s)/Mg2+(aq) // I2 (s)/I-(aq) /Pt; give the equilibrium constant (Keq) expression. | | | | | | | | | | | | | | | | | | | 1 | L4,L5 | 4 |
| 10 | In potentiometric titration of FAS against acidified K2Cr2O7, the EMF doubles after the complete oxidation of Fe2+. Write the symbolic notation of a redox electrode which exists after the equivalence point. | | | | | | | | | | | | | | | | | | | 1 | L3,L4 | 3 |
| **Course Outcomes (As per Bloom’s revised taxonomy)** | | | | | | | | | | | | | | | | | | | | | | |
| 1.      Understand the principles of Chemistry in Engineering (L1). | | | | | | | | | | | | | | | | | | | | | | |
| 2.      Applying the knowledge of Chemistry in solving societal problems related public health, safety and environmental issues (L2, L3). | | | | | | | | | | | | | | | | | | | | | | |
| 3.      Identify, analyze and interpret Engineering problems associated with chemistry to achieve solutions (L3, L4). | | | | | | | | | | | | | | | | | | | | | | |
| 4. Developing solutions for problems associated with water, fuel, corrosion, battery, nanomaterial and polymer technologies (L4). | | | | | | | | | | | | | | | | | | | | | | |