JHARKHAND Rai University RANCHI

End Semester/ Reappear (Semester I) Examination December, 2024

Programme: Diploma (MiE/CSE) **Full Marks: 70**
Course: Basic Chemistry **Time: 3 Hrs.**
Course Code: 8DBSC102
Enrolment no. _____

Section I

1. **Short Answer type questions. Answer any four.** **4 x 5 = 20**
   a. Distinguish between Electrovalent and Covalent compounds with suitable examples.
   b. Define oxidation and reduction reactions with examples.
   c. Write physical properties and application of Aluminum and Zinc.
   d. Discuss any four engineering uses of plastics depending upon their properties.
   e. What is natural rubber? Describe the processing of natural rubber.
   f. What are the types of electrodes? Explain with examples.

Section II

Long Answer type questions. Answer any three. **3 x 10 = 30**

2. Write short notes on: a) Pauli's exclusion principle b) Hund's rule c) Aufbau's principle On the basis of above rule draw electronic configuration of 1) $^{39}K_{19}$ 2) $^{20}Ne_{10}$
3. Explain and derive Faraday's First and Second laws of electrolysis.
4. What is smelting? Where is it useful? Explain the term gangue and flux are complimentary to each other
5. Bring out the difference between thermosetting and thermo-softening plastic.
6. a. Explain the mechanism of electrolysis of aqueous copper sulphate Solution using carbon electrodes.
   b. Distinguish between the electrolytic cell and the electrochemical cell.

Section III

Application based questions. Answer any one. **1 x 20 = 20**

7. Classify alloy and elaborate different method of preparation of alloy.
8. a. Define electrolysis. Design and explain the mechanism of electrolysis by drawing a suitable diagram.
   b. Solution of CuSO4 is electrolyzed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at the cathode?
9. a. Lithium exists in nature in the form of two isotopes, Li-6 and Li-7. Natural lithium contains 6% light isotopes. Calculate average atomic weight.
   b. An element Z contains two naturally occurring isotopes $^{35}Z_{17}$ and $^{37}Z_{17}$. If the average atomic mass of this element be 35.5 u, calculate the percentage of two isotopes.

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