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CBSE 12th Chemistry 2010 Unsolved Paper Outside Delhi

TIME - 3HR. | QUESTIONS - 30

THE MARKS ARE MENTIONED ON EACH QUESTION

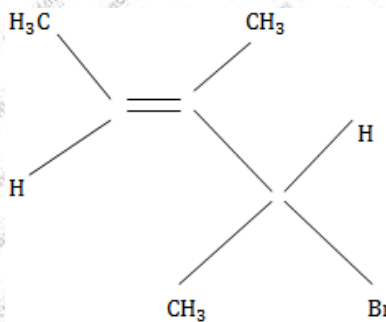
SECTION - A

Q.1. What type of interactions hold the molecules together in a polar molecular solid? *1 mark*

Q.2. 2g each of two solutes A and B are dissolved separately in 50g each of the same solvent. Which will show greater elevation in boiling point. *1 mark*

Q.3. Fluorine does not exhibit any positive oxidation state. Why? *1 mark*

Q.4. Give the IUPAC name of the following compound: *1 mark*



Q.5. Write the structure of the molecule of compound whose IUPAC name is 1-phenylpropan-2-ol. *1 mark*

Q.6. What is Tollens's reagent? Write one usefulness of this reagent. *1 mark*

Q.7. What is meant by 'reducing sugars'. *1 mark*

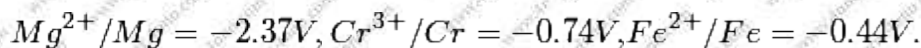
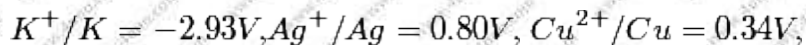
Q.8. How can you describe this designation 6, 6, mean in the name nylon -6, 6? *1 mark*

SECTION - B

Q.9. Define the terms, 'osmosis' and 'osmotic pressure'. What is the advantage of using osmotic pressure as compared to other colligative properties for the determination of molar masses of solutes in solutions? *2 marks*

Q.10. Express the relation among the cell constant, the resistance of the solution in the cell the conductivity of the solution. How in the conductivity of a solution related to its molar conductivity? *2 marks*

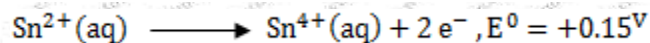
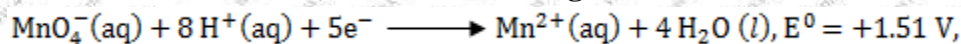
Q.11. Given that the standard electrode potentials (E^0) of metals are: *2 marks*



Arrange these metals in an increasing order of their reducing power.

OR

Two half-reaction of an electrochemical cell are given below:



construct redox equation and predict if the recon is reactant or product favored.

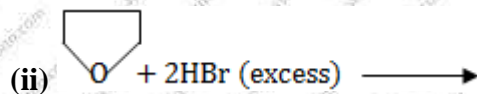
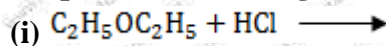
Q.12. Describe the following: *2 marks*

(i) Tyndall effect

(ii) Shape-selective catalysis

Q.13. What is meant by coagulation of a colloidal solution? Name any method by which coagulation of lyophobic sols can be carried out. *2 marks*

Q.14. Complete the following reactions *2 marks*



Q.15. Draw the structural formulae of the following compounds: *2 marks*

(i) $H_4P_2O_5$

(ii) XeF_4

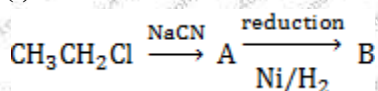
Q.16. Give the chemical tests to distinguish between the following pairs of compounds: *2 marks*

(i) Ethylamine and Aniline

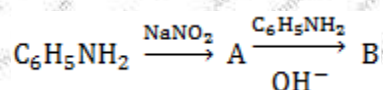
(ii) Aniline and Benzyl amine

Q.17. Identify A and B in each of the following processes: 2 marks

(i)



(ii)

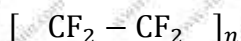


Q.18. Draw the molecular structures of the monomers of: 2 marks

(i) PVC

(ii) Teflon

:



SECTION - C

Q.19. The density of copper metal is 8.95 g cm^{-3} . If the radius of copper atom be 127.8 pm, is the copper unit cell simple cubic, body-centered cubic or face-centered cubic. 3 marks

Q.20. What mass of NaCl (molar mass = 58.5 g mol^{-1}) be dissolved in 65 g of water to lower the freezing point by 7.5°C ? The freezing point depression constant, K_f , for water is $1.86 \text{ K kg mol}^{-1}$. Assume van't Hoff factor for NaCl is 1.87. 3 marks

Q.21. Describe the role of the following: 3 marks

(i) NaCN in the extraction of silver from a silver ore

(ii) Iodine in the refining of titanium

(iii) Cryolite in the metallurgy of aluminum.

OR

Describe the principle involved in each of the following processes of metallurgy:

(i) Froth floatation method

(ii) Electrolytic refining of metals

(iii) Zone refining of metals

Q.22. Why is europium (II) more stable than cerium (II). 3 marks

Q.23. Differentiate between S_N1 and S_N2 mechanisms and Give examples. 3 marks

Q.24. How would you convert the following: 3 marks

(i) Phenol to benzoquinone

(ii) Propanone to 2-methylpropan-2-ol

(iii) Propene to propan-2-ol

Q.25. Explain the following: 3 marks

- The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a strong oxidizing agent than chlorine.
- XeF_2 is linear molecule without a bend.
- NCl_3 is an endothermic compound while NF_3 is an exothermic one.

Q.26. Amino acids may be acidic, alkaline or neutral, how does this happen? What are essential and nonessential amino acids? Name one of each type. 3 marks

Q.27. Explain the following terms with one example in each case: 5 marks

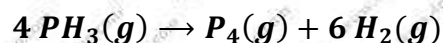
- Food preservatives
- Enzymes
- Detergents

SECTION - D

Q.28. (a) Explain the following terms: 5 marks

- Rate of a reaction
- Activation energy of a reaction

(b) The decomposition of phosphine, PH_3 , proceeds according to the following equation:



It is found that the reaction follows the following rate equation:

$$Rate = k[PH_3].$$

The half-life of PH_3 is 37.9 s at $120^\circ C$.

- How much time is required for $3/4$ th of PH_3 to decompose?
- What fraction of the original sample of PH_3 remains behind after 1 minute?

OR

(a) Explain the following terms:

- Order of a reaction
- Molecularity of a reaction

(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. ($R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$)

Q.29. (a) Complete the following chemical equation. 5 marks

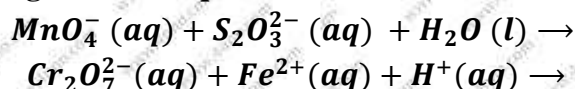
- $Cr_2O_7^{2-}(aq) + H_2S(g) + H^+(aq) \rightarrow$
- $Cu^{2+}(aq) + I^-(aq) \rightarrow$

(b) How would your account for the following

- The oxidizing power of oxyanions are in the order $VO_2^+ < Cr_2O_7^{2-} < MnO_4^-$.
- The third ionization enthalpy of manganese ($Z = 25$) is exceptionally high.
- Cr^{2+} is a stronger reducing agent than Fe^{2+} .

OR

(a). Complete the following chemical equations:



(b). Explain the following observations:

- (i) La^{3+} ($Z = 57$) and Lu^{3+} ($Z = 71$) do not show any colour in solutions.
- (ii) Amount the divalent cations in the first series of transition elements, manganese exhibits the maximum paramagnetic.
- (iii) Cu^+ ion is not known in aqueous solutions.

Q.30. (a) Illustrate the following name reactions giving a chemical equation in each case:

- (i) Clemmensen reaction
- (ii) Cannizzaro's reaction

(b) Describe how the following conversions can be brought about:

- (i) Cyclohexene to cyclohexene 1-one
- (ii) Ethyl Benzene to benzoic acid
- (iii) Bombazine to benzoic acid . 5 marks

OR

(a) Illustrate the following name reactions:

- (i) Hell - Volhard - Zelinsky reaction
- (ii) Wolff - Kishner reduction reaction

(b) How are the following conversions carried out:

- (i) Ethyl Cyanide to ethanoic acid
- (ii) Butan-1-ol to butanoic acid
- (iii) Methylbenzene to benzoic acid

Write chemical equations for the involved reactions.




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