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Previous Year Paper

Chemistry - 2010



Match The Following

1. Match the following:

A. Nernst equation	(i) Chiral Carbon atom
B. Phenol	(ii) Hexadentate
C. Entropy	(iii) Electrochemical cells
D. Entropy	(iv) Reimer-Tiemann reaction
E. Polarised light	(v) Second law of Thermodynamics.

Answer



Fill In the Blanks

2. Fill in the blanks by choosing the appropriate word / words from those given in the brackets:

(benzoic acid, negative, positive, vapour, vapour pressure, benzal chloride, more, less, electropositivity, electronegativity, reducing, oxidising, basic, acidic, PCl_5 , SOCl_2 phenol, water, ice.)

(i) When water freezes to _____ the free energy of the system is _____.

(ii) The _____ pressure of an aqueous solution of 0.1 M cane sugar is _____ than that of pure water.

(iii) When benzaldehyde reacts with _____ it forms _____ and POCl_3 .

(iv) An aqueous solution of a mixture of ammonium chloride and ammonium hydroxide is a _____ buffer solution with pH _____ than seven.

(v) Halogens are strong _____ agents because of their high

Answer



Multiple Choice Questions

3. Complete the following statements by selecting the correct alternative from the choices given:

The hybridization of the iron atom in $[\text{Fe}(\text{CN})_6]^{3-}$ complex is:

A. sp^3 B. d^5sp^3

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Answer

4. Complete the following statements by selecting the correct alternative from the choices given:

The product formed when aniline is warmed with chloroform and caustic potash is:

- A. Phenyl chloride
- B. Methyl isocyanide
- C. Phenyl isocyanide
- D. Phenyl isocyanide

Answer

5. Complete the following statements by selecting the correct alternative from the choices given: For a dissociated solute in solution the value of van't Hoff factor is:

For a dissociated solute in solution the value of van't Hoff factor is:

- A. Zero
- B. One
- C. Greater than one
- D. Greater than one

Answer

6. Complete the following statements by selecting the correct alternative from the choices given:

The unit of equivalent conductance is:

- A. $\text{Ohm}^{-1}\text{cm}^2\text{equiv}^{-1}$
- B. $\text{Ohm}^{-1}\text{cm}^2\text{gm}^{-1}$
- C. $\text{Ohm cm}^2 \text{equiv}^{-1}$
- D. $\text{Ohm cm}^2 \text{equiv}^{-1}$

Answer

7. Complete the following statements by selecting the correct alternative from the choices given:

An example of intensive property is:

- A. Number of moles
- B. Mass
- C. Volume
- D. Volume

Answer



Short Answer Type

8. Answer the following questions:

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metals is a stronger reducing agent? Give a reason for your answer.

[Answer](#) Study, Assignments, Solved Previous Year Papers . Questions and Answers. Free Forever.

9. Answer the following questions:

The osmotic pressure of a 0.25 M urea solution is 2.67 atm. What will be the osmotic pressure of a 0.25 M solution of Potassium Sulphate?

[Answer](#)

10. Answer the following questions:

Name the type of isomerism exhibited by lactic acid, $\text{CH}_3\text{CH}(\text{OH})\text{COOH}$ giving the reason for your answer.

[Answer](#)

11. Answer the following questions:

Write the relationship between Gibb's free energy, enthalpy, entropy and the temperature of a system. What is the equation known as?

[Answer](#)

12. Answer the following questions:

The elevation of boiling point produced by dilute equimolar solutions of three substances is in the order $A > \text{glucose} > B$. Suggest a reason for this observations.

[Answer](#)

13. What is the mass of a non-volatile solute (molar mass 60) that need to be dissolved in 100 g of water in order to decrease the vapour pressure of water by 25%? What will be the molality of the solution? [Answer](#)

14. Show that the time required for the completion of 75% of a reaction of first order is twice the time required for the completion of 50% of the reaction. [Answer](#)

15. Give reason for the following:

(i) The density of ice is less than that of water.

(ii) A solution of potassium carbonate turns red litmus paper blue while that of potassium sulphate has no effect on litmus.

[Answer](#)

16. Draw the structure of sulphur hexafluoride molecule. State the hybridization of the central atom and the geometry of the molecule. How many sigma bonds are present in the molecule? [Answer](#)

17. Lead (II) sulphide has FCC crystal structure. The edge length of the unit cell of PbS crystal is 500 pm. What is its density? [$\text{Pb} = 207.2$ $\text{S} = 32$] [Answer](#)

18. i) Explain the purification of common salt by bubbling hydrogen chloride through the aqueous solution.

ii) Calculate the pH of a buffer solution containing 0.45 moles of NH_4OH and 0.75 moles of

NH_4Cl . K_b for NH_4OH is 1.8×10^{-5} . [Answer](#)

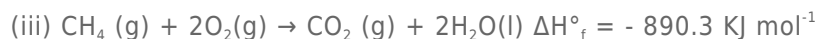
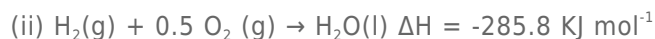
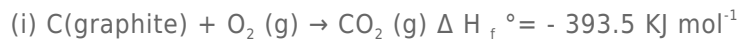
19. Will nickel displace copper from a 1 M solution of copper sulphate ? Justify your
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20. State Kohlraush's Law and give its mathematical expression mentioning the terms involved in it.
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[Answer](#)

21. Calculate the enthalpy change for the reaction: C(graphite) + 2H₂(g) → CH₄(g)

Given that:



[Answer](#)

22. (i) A solution of 0.1(N)KCl offers a resistance of 245 ohms. Calculate the specific conductance and the equivalent conductance of the solution if the cell constant is 0.571 cm⁻¹
(ii) Compare the crystals of copper and diamond giving one similarity and one difference.
(iii) If the standard free energy change for a reaction is found to be zero, what is the value of the equilibrium constant for the reaction?

[Answer](#)

23. How can ozone be manufactured by Siemen's ozonizer? How is pure ozone recovered from the products? [Answer](#)

24. Give balanced equations for each of the following reactions:

(i) Chlorine and hot concentrated caustic soda.

(ii) Sulphur dioxide and acidified potassium permanganate.

[Answer](#)

25. (i) Name the type of isomerism shown by the following pair of compounds: [PtCl₂(NH₃)₄]Br₂ and [PtBr₂(NH₃)₄]Cl₂

Give a chemical test to distinguish between the given pair of isomers.

(ii) Draw the geometrical isomers exhibited by the compound [PtCl₂(NH₃)₂].

[Answer](#)

26. Write the formulae of the following co-ordination compounds:

(i) tetracarbonyl nickel (0)

(ii) potassium dicyanoargentate (1)

[Answer](#)

27. Account for the following:

(i) SF₆ exists but OF₆ does not, though both oxygen and sulphur belong to the same group in the Periodic table.

(ii) Zn⁺² compounds are white in colour but Cu⁺² compounds are coloured, though both zinc and copper are d-block elements.

[Answer](#)

28. (i) To which class of compounds does IF₇ belong? What is the structure of the molecule?
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Answer

(ii) Give the balanced equation for the preparation of silver nitrate in the laboratory.

29. How can the following conversions be brought about: Study, Assignments, Solved Previous Year Papers, Questions and Answers. Free Forever.

(i) Ethylamine to methylamine

(ii) Benzene to acetanilide

(iii) 2 Propanol to acetoxime

Answer

30. Give one example for each of the following name reactions:

(i) Hell Volhard Zelinsky (HVZ) reaction,

(ii) Clemmensen's reduction.

Answer

31. Draw three isomers of a compound with the molecular formulae C_3H_9N . Name the isomers.

Answer

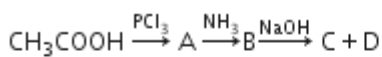
32. Give one good chemical test to distinguish between the following pairs of compounds:

(i) 1 Propanol and 2 Propanol.

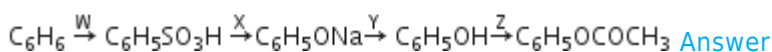
(ii) Oxalic acid and benzoic acid.

Answer

33. (i) Identify the products A, B, C and D.



ii) Identify the reagents W, X, Y and Z



Answer

34. (i) What are thermoplastics and thermosetting plastics? Give one example of each kind.

(ii) Give one example of a fibrous protein. Name the final product of hydrolysis of proteins. What is denaturation of proteins?

Answer

35. Give balanced equations for the following reactions:

(i) Benzaldehyde treated with hydrogen cyanide.

(ii) Chlorine is passed through diethyl ether.

(iii) Benzoic acid solution is treated with sodium carbonate.

Answer

36. An organic compound A with molecular formula $C_3H_8O_3$ reacts with oxalic acid at $110^\circ C$ to give a monocarboxylic acid B. B gives a silver mirror with Tollen's reagent and reduces acidified potassium permanganate solution. Identify A and B and give the reaction of B with acidified $KMnO_4$ solution. Answer