CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

SAMPLE PAPER 2012

Part I

1. For a spontaneous change to take place, the ΔS of the system should be _____ and ΔG of the system should be_____ .

Watch Video Solution

2. Hydrolysis of methyl propanoate gives _____and_____.

Watch Video Solution

3. Solutions which strictly obey _____ law are called _____ solutions.

Watch Video Solution

4. A bonds are formed by the _____ overlap of _____ orbitals:

Watch Video Solution

5. Zinc can displace _____ from $CuSO_4$ solution, but cannot displace _____ from $MgSO_4$ solution.

Watch Video Solution

6. The quantity of electricity required to deposit $1 \cdot 15g$ of sodium from molten $NaCl(Na = 23, Cl = 35 \cdot 5)$ is

A. $1F$

B. $0 \cdot 5F$

C. $0 \cdot 05F$

D. $1 \cdot 5F$

Answer: C

Watch Video Solution

7. When acetic acid is reacted with calcium hydroxide and the product is distilled dry, the i compound formed is :

A. Calcium acetate

B. Acetone

C. Acetaldehyde

D. Acetic anhydride

Answer: B

Watch Video Solution

8. The [OH-] concentration of a weak base is given by : * *

A. ck_b

B. $\sqrt{ck_b}$

C. $\sqrt{K_b / c}$

D. $\sqrt{k_b}$

Answer:

Watch Video Solution

9. In a plot of log.k vs 1/T, the slope'is :

A. $-E_a / 2 \cdot 303$

B. $E_a / 2 \cdot 303R$

C. $E_a / 2 \cdot 303$

D. $-E_a / 2 \cdot 303R$

Answer: D

Watch Video Solution

10. Among the following coordination compounds, the one giving a white ppt. with $BaCl_2$ is

A. $\left(Cr(H_2O)_5Br\right]SO_4$

B. $\left[Cr(H_2O)_5SCN\right]$

C. $\left[CO(NH_3)_5SO_4\right]Br$

D. $\left[Pt(NH_3)_6\right]Cl_4$

Answer: A

Watch Video Solution

11. A solution is prepared by dissolving three moles of glucose in one litre of water and a solution Y is prepared by dissolving 1.5 moles of sodium chloride in one litre of water. Will the osmotic pressure of X be higher, lower or equal to that of Y? Give a reason for your answer.

Watch Video Solution

12. Give one example (equation of a homogeneously catalysed reaction and name the catalyst.

Watch Video Solution

13. Write the formula of the product formed when formaldehyde reacts with ammonia and name the product.

Watch Video Solution

14. If the ionization (dissociation) constant of acetic acid is k_a , what will be the pH of a solution containing equal concentrations of acetic acid and sodium acetate ?**

Watch Video Solution

15. What is the electronic cofiguration of charomium atom (z= 24) Give reason for your answer.

Watch Video Solution

16. Match the following:

(i)	*Nernst equation*	(a)	*Water*
(ii)	*Lactic acid***	(b)	*Constant volume*
(iii)	*Amphiprotic solvent*	(c)	*Ammonia*
(iv)	*Lewis base*	(d)	*Optical isomers*
(v)	*Isochoric process*	(e)	*Electrochemical cells.*

Watch Video Solution

Part Ii Section A

1. A solution of urea in water has a boiling point of $100 \cdot 18^{\circ} C$. Calculate the freezing point of the solution.(K for water is $1 \cdot 86 \ \mathrm{K\,kg} \ mol^{-1}$ and K_b for water is $0 \cdot 512 \ \mathrm{K\,kg} \ mol^{-l}$).

Watch Video Solution

2. A solution of lactose containing 8.45 g of lactose in 100g of water has a vapour pressure of 4.559 mm of Hg at $0^{\circ} C$. If the vapour pressure of pure water is 4.579 of Hg, calculate the molecular weight of lactose.

Watch Video Solution

3. The molecular weight of H_2S is more than that of H_2O, $but H_2S$ is a gas and H_2O is a liquid. Explain.

Watch Video Solution

4. When potassium cyanide reacts with water, will the resulting solution be acidic, alkaline or neutral ? Justify your answer.* *

Watch Video Solution

5. What is the hybridization of the carbon atom in ethyne molecule ? What is the $H-C-H$ bond angle ?* *

Watch Video Solution

6. State and explain the second law of thermodynamics.

Watch Video Solution

7. Calculate the maximum work that can be obtained from the given electrochemical cell constructed with two metals M and N.

$\left[E^{\Theta}_{M^{2+}/M} = -0.76V, E^{\Theta}_{N^{2+}/N} = 0.34V\right]$

Watch Video Solution

8. To precipitate group III cations NH_4Cl should be added to the solution before the addition of ammonium hydroxide. Explain why.**

Watch Video Solution

9. A study of chemical kinetics of the reaction $A + B \rightarrow$ products, gave the following data at $25^{\circ}C$:

Experiment	[A]	[B]	$\frac{d[\text{Products}]}{dt}$
1	1·0	0·15	$4{\cdot}20 \times 10^{-6}$
2	2·0	0·15	$8{\cdot}40 \times 10^{-6}$
3	1·0	0·20	$5{\cdot}60 \times 10^{-6}$

Find : (1) The order of reaction with respect to A. (2) The order of reaction with respect to B. (3) The rate law.

Watch Video Solution

10. What are F-centres in an ionic crystal ?

Watch Video Solution

11. Why solids with F-centres are paramagnetic?

Watch Video Solution

12. The central atom of methane and water is in the same state of hybridization, but the shapes of the two molecules are different. Discuss. * *

Watch Video Solution

13. The conductivity of $0 \cdot 2M$ KCl solution is $3Xx10^{-2}ohm^{-1}cm^{-1}$. Calculate its molar conductance.

Watch Video Solution

14. Draw the valence shell molecular orbital diagram of oxygen molecule and predict its magnetic nature. * *

Watch Video Solution

15. Calculate the solubility of lead chloride in water, if its solubility product is $1 \cdot 7 \times 10^{-5}$. $^{**}(Pb = 206, C1 = 35 \cdot 5)$

Watch Video Solution

16. For a crystal of diamond, state :

The hybridization of the carbon atom.

Watch Video Solution

17. For a crystal of diamond, state :

The coordination number of each carbon atom.

Watch Video Solution

18. For a crystal of diamond, state :

The type of lattice in which it crystallizes.

Watch Video Solution

19. For a crystal of diamond, state :

The number of carbon atoms present per unit cell.

Watch Video Solution

Part Ii Section B

1. Write the formulae of the following coordination compounds :

potassiumtetracyanonickel(0).

Watch Video Solution

2. Write the formulae of the following coordination compounds :

triamminetrinitrocobalt(III).

Watch Video Solution

Watch Video Solution

3. $[CoF_6]^{3-}$ is a coordination complex ion.

What is the oxidation number of cobalt in the complex ?

Watch Video Solution

4. $[CoF_6]^{3-}$ is a coordination complex ion.

How many unpaired electrons are there in the complex ?

Watch Video Solution

5. $[CoF_6]^{3-}$ is a coordination complex ion.

State the magnetic behaviour of the complex.

Watch Video Solution

6. $[CoF_6]^{3-}$ is a coordination complex ion.

Give the I.U.P.A.C. name of the complex.

Watch Video Solution

7. Draw the structural isomer of $\left[Co(NH_3)_5NO_2\right)Cl_2$ and name the type of isomerism.

Watch Video Solution

8. Give the equations for the conversion of argentite (Ag_2S) to metallic silver.

Watch Video Solution

9. Give balanced equation for the following reaction :

Acidified potassium permanganate and oxalic acid.

Watch Video Solution

10. Give balanced equations for the following reaction :

Ozone and mercury.

Watch Video Solution

11. Give balanced equations for the following reaction :

Action of heat on a mixture of sodium chloride and concentrated sulphuric acid.

Watch Video Solution

12. Explain why transition metals form complex compounds.

Watch Video Solution

13. What is the hybridization of chlorine atom in ClF_3 molecule ?

(ii) Draw the structure of the molecule and state its geometry.

Watch Video Solution

14. What is the hybridization of chlorine atom in ClF_3 molecule ?

(ii) Draw the structure of the molecule and state its geometry.

Watch Video Solution

15. Name the inert gases used for :

(i) Filing sodium vapour lamps.

(ii) Obtaining light of different colours in neon signs.

Watch Video Solution

16. Name the inert gases used for :

(i) Filing sodium vapour lamps.

(ii) Obtaining light of different colours in neon signs.

Watch Video Solution

Part Ii Section C

1. How can the following conversions be brought about :

Ethanol to methylamine.

Watch Video Solution

2. How can the following conversion be brought about : Benzene to phenol

Watch Video Solution

3. Complete the following reaction and name the reaction:

$$\ldots\ldots\ldots + 3I_2 + 4KOH \rightarrow CHI_3 + CH_3COOK + 3KI + 3H_2O$$

Watch Video Solution

4. Complete the following reaction and name the reaction:

$$C_3H_7NH_2 + CHCl_3 + 3KOH(alc.) \xrightarrow{\Delta} \ldots\ldots\ldots + 3KCl + 3H_2O$$

Watch Video Solution

5. Name the type of polymerization (addition or condensation) and name the monomers in each of the following polymers:

(i) Protein (ii) Polyethylene

Watch Video Solution

6. Name the type of polymerization (addition or condensation) and name the monomers in each of the following polymers:

(i) Protein (ii) Polyethylene

Watch Video Solution

7. (i) What type of isomers are glucose and fructose ?

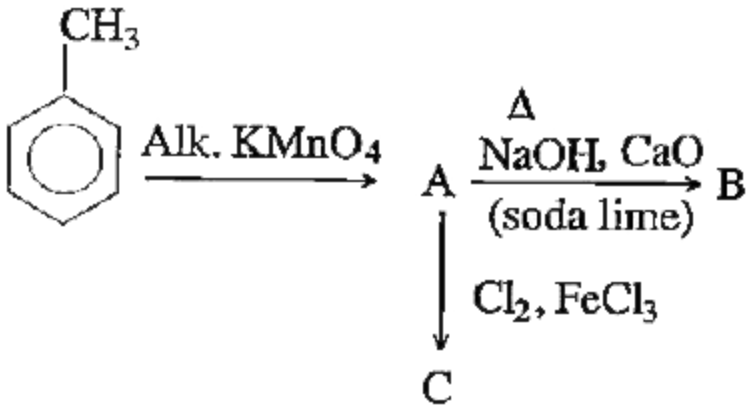
(ii) Name the functional group common to both glucose and fructose.

Watch Video Solution

8. Name the functional group common to both glucose and fructose.

Watch Video Solution

9. Identify the products A, B and C:



Watch Video Solution

10. Identify the reagents X, Y and Z.

$$C_2H_5Cl \xrightarrow{X} C_2H_5CN \xrightarrow{Y} C_2H_5CH_2NH_2 \xrightarrow{Z} C_2H_5CH_2NHCOCH_3$$

Watch Video Solution

11. Give balanced equations for the following reactions:

Benzaldehyde and hydroxylamine.

Watch Video Solution

12. Give balanced equations for the following reactions:

Benzoic acid and phosphorus pentachlo-ride.

Watch Video Solution

13. Give balanced equation for the following reaction :

1-butanol and hydrogen chloride.

Watch Video Solution

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

Methanal and ethanal.

Watch Video Solution

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

Urea and benzoic acid.* *

Watch Video Solution

16. An aliphatic hydrocarbon A on treatment with sulphuric acid in the presence of $HgSO_4$ yields a liquid B with molecular formula C_2H_4O. Bon oxidation with acidified potassium dichromate yields C which gives effervescence with sodium bicarbonate. C when treated with $SOCl_2$ gives D. When D reacts with ethanol it gives a sweet smelling liquid E. E is also formed when C reacts with ethanol in the presence of conc. H_2SO_4.

Identify A, B, C, D and E.

Watch Video Solution

17. An aliphatic hydrocarbon A on treatment with sulphuric acid in the presence of $HgSO_4$ yields a liquid B with molecular formula C_2H_4O. Bon oxidation with acidified potassium dichromate yields C which gives effervescence with sodium bicarbonate. C when treated with $SOCl_2$ gives D. When D reacts with ethanol it gives a sweet smelling liquid E. E is also formed when C reacts with ethanol in the presence of conc. H_2SO_4.

Draw the structure of the isomer of compound B.

Watch Video Solution

18. An aliphatic hydrocarbon A on treatment with sulphuric acid in the presence of $HgSO_4$ yields a liquid B with molecular formula C_2H_4O. Bon oxidation with acidified potassium dichromate yields C which gives effervescence with sodium bicarbonate. C when treated with $SOCl_2$ gives D. When D reacts with ethanol it gives a sweet smelling liquid E. E is also formed when C reacts with ethanol in the presence of

conc. H_2SO_4.

Identify A, B, C, D and E.

Watch Video Solution

19. The compound C_6H_{12} shows optical iso merism. Draw the structural formula of the compound and name it.* *

Watch Video Solution

20. Name any three types of isomerism that the compound with molecular formula C_4H_7CI can give rise to. Also represent the structures of the compounds relevant to these isomers.* *

Watch Video Solution

21. Give equations to show what happens when a mixture of potassium cyanate and ammonium sulphate is strongly heated. Name the reaction.* *

Watch Video Solution