CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

CHEMISTRY-2019

Question

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

(more than, primary, cathode, Lucas reagent, two, four, less than, Grignard's -reagent, tertiary, anode, zero, equal to, three)

The elevation of boiling point of 0.5 M K_2SO_4 solution is _____ that of 0.5 M urea solution. The elevation of boiling point of 0.5 M KCl solution is _____ that of 0.5 M K_2SO_4 solution.

Watch Video Solution

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

(more than, primary, cathode, Lucas reagent, two, four, less than, Grignard's -reagent, tertiary, anode, zero, equal to, three)

A mixture of conc. HCl and anhydrous $ZnCl_2$ is called _____ which shows maximum reactivity with _____ alcohol.

Watch Video Solution

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

(more than, primary, cathode, Lucas reagent, two, four, less than, Grignard's -reagent, tertiary, anode, zero, equal to, three)

In electrolytic refining the impure metal is made _____ while a thin sheet of pure metal is used as _____ .

Watch Video Solution

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

(more than, primary, cathode, Lucas reagent, two, four, less than, Grignard's -reagent, tertiary, anode, zero, equal to, three)

When the concentration of a reactant of first order reaction is doubled, the rate of reaction becomes _____ times, but for a _____ order reaction, the rate of reaction remains the same.

Watch Video Solution

5. Select the correct alternative from the choices given :

The cell reaction is spontaneous or feasible when e.m.f. of the cell

is :

A. negative

B. positive

C. zero

D. either positive or negative

Answer: B

Watch Video Solution

6. Select the correct alternative from the choices given :

Which, among the following polymers, is a polyester?

A. Melamine

B. Bakelite

C. Terylene

D. Polythene

Answer: C

Watch Video Solution

7. Select the correct alternative from the choices given :

The correct order of increasing acidic strength of the oxoacids of chlorine is :

A. $HClO_3 < HClO_4 < HClO_2 < HClO$

B. $HClO < HClO_2 < HClO_3 < HClO_4$

C. $HClO_2 < HClO < HClO_4 < HClO_3$

D. $HClO_3 < HClO_4 < HClO < HClO_2$

Answer: B

Watch Video Solution

8. A catalyst is a substance which :

A. changes the equilibrium constant of the reaction.

B. increases the equilibrium constant of the reaction.

C. supplies energy to the reaction.

D. shortens the time to reach equilibrium.

Answer:

Watch Video Solution

9. Match the following :

(1) Diazotisation	(a) Anisotropic
(ii) Crystalline solid	(b) Reimer-Tiemann reaction
(iii) Phenol	(c) Diphenyl
(iv) Fittig reaction	(d) Aniline

Watch Video Solution

Watch Video Solution

10. For the reaction $A + B \rightarrow C + D$, the initial rate for different reactions and initial concentration of reactants are given below:

S. No.	Initial Conc. [A] mole L^{-1}	Initial Conc. [B] mole L^{-1}	Initial rate (mole L^{-1} sec^{-1})
1.	1·0	1·0	2×10^{-3}
2.	2·0	1·0	4×10^{-3}
3.	4·0	1·0	8×10^{-3}
4.	1·0	2·0	2×10^{-3}
5.	1·0	4·0	2×10^{-3}

(i) What is the overall order of reaction ?

(ii) Write the rate law equation.

Watch Video Solution

11. 25% of a first order reaction is completed in 30 minutes. Calculate the time taken in minutes for the reaction to go to 90% completion.

Watch Video Solution

12. The chemical substances used to bring down body temperature in high fever are known as

Watch Video Solution

13. What are tranquilizers ? Give one example of a tranquilizer.

Watch Video Solution

14. Write the balanced chemical equation for the following:

Chlorobenzene treated with ammonia in the presence of Cu_2O at 475 K and 60 atm.

Watch Video Solution

15. Write the balanced chemical equation for the following:

Ethyl chloride treated with alcoholic potassium hydroxide.

Watch Video Solution

16. Name the monomer and the type of polymerisation that takes place when PTFE is formed.

Watch Video Solution

17. Write the names and structures of monomers used for getting the following polymers : 2

(i) Buna-S

(ii) Nylon-6,6

Watch Video Solution

18. Name two water soluble vitamins and the diseases caused by their deficiency in the diet of an individual.

Watch Video Solution

19. How will you obtain the following ? (Give balanced chemical equations):

Benzene from phenol

Watch Video Solution

20. How is iodoform prepared from ethanol? Give balanced equation.

Watch Video Solution

21. How will you obtain the following ? (Give balanced chemical equations):

Salicylaldehyde from phenol

Watch Video Solution

22. How will you obtain the following ? (Give balanced chemical equations):

Propan-2-ol from Grignard's reagent

Watch Video Solution

23. Show that for a first order reaction the time required to complete 75% of reaction is about 2 times more than that required to complete 50% of the reaction.

Watch Video Solution

24. When 0.4 g of acetic acid is dissolved in 40 g of benzene, the freezing point of the solution is lowered by 0.45 K. Calculate the degree of association of acetic acid. Acetic acid forms dimer when dissolved in benzene.

(K_f for benzene = 5.12 K kg mol^{-1} at.wt. C = 12, H = 1, O = 16)

Watch Video Solution

25. A solution is prepared by dissolving 9.25 g of non volatile solute in 450 ml of water. It has an osmotic pressure of 350 mm of Hg at $27^{\circ}C$. Assuming the solute is non-electrolyte, determine its molecular mass.

(R = 0.0821 lit atm $K^{-1}mol^{-1}$)

Watch Video Solution

26. An element occurs in body centered cubic structure. Its density is $8.0 g / cm^3$. If the cell edge is 250 pm, calculate the atomic mass of an atom of this element. $\left(N_A = 6.023 \times 10^{23}\right)$

Watch Video Solution

27. Describe the role of the following :

(i) NaCN in the extraction of silver ore.

(ii) Cryolite in the extraction of aluminium from pure alumina.

Watch Video Solution

28. Describe the role of the following:

NaCN in the extraction of silver from a silver ore.

Watch Video Solution

29. Describe the role of the following:

Coke in the extraction of iron from its oxides.

Watch Video Solution

30. Write the IUPAC names of the following :

$K_3\left[Fe(C_2O_4)_3\right]$

Watch Video Solution

31. Write the IUPAC names of the following :

$\left[Co(NH_3)_5Cl\right]SO_4$

Watch Video Solution

32. $\left[Fe(CN)_6\right]^{4-}$ is a coordination complex ion.

Calculate the oxidation number of iron in the complex.

Watch Video Solution

33. $\left[Fe(CN)_6\right]^{4-}$ is a coordination complex ion.

Is the complex ion diamagnetic or paramagnetic ?

Watch Video Solution

34. $\left[Fe(CN)_6\right]^{4-}$ is a coordination complex ion.

What is the hybridisation state of the central metal atom?

Watch Video Solution

35. $\left[Fe(CN)_6\right]^{4-}$ is a coordination complex ion.

Write the IUPAC name of the complex ion.

Watch Video Solution

36. Explain why :

Transition elements form alloys.

Watch Video Solution

37. Explain why :

Zn^{2+} salts are white whereas Cu^{2+} salts are coloured.

Watch Video Solution

38. Explain why :

Transition metals and their compounds act as catalyst.

Watch Video Solution

39. Complete and balance the following chemical equations :

$KMnO_4 + H_2SO_4 + H_2C_2O_4 \rightarrow$ _____+____ + ____ +_____

Watch Video Solution

40. Complete and balance the following chemical equations :

$K_2Cr_2O_7 + H_2SO_4 + KI \rightarrow$ _____+____ + ____ +_____

Watch Video Solution

41. Complete and balance the following chemical equations :

$K_2Cr_2O_7 + H_2SO_4 + FeSO_4 \rightarrow$ _____+____ + ____ +_____

Watch Video Solution

42. Give balanced equations for the following:

Aniline is treated with bromine water.

Watch Video Solution

43. Give balanced equations for the following:

Ethylamine is heated with chloroform and alcoholic solution of potassium hydroxide.

Watch Video Solution

44. Give balanced equations for the following:

Benzene diazonitem chloride is treated with ice cold solution of aniline in acidic medium.

Watch Video Solution

45. Define the following terms with suitable examples :

Peptization

Watch Video Solution

46. Define the following terms with suitable examples :

Electrophoresis

Watch Video Solution

47. Define the following terms with suitable examples :

Dialysis

Watch Video Solution

48. (a) Calculate the mass of Ag deposited at cathode when a current of 2 amperes was passed through a solution of $AgNO_3$ for 15 minutes

(Given : Molar mass of $Ag = 108 g mol^{-1} 1F = 96500 C mol^{-1}$)

(b) Define fuel cell

Watch Video Solution

49. Calculate the e.m.f. and ΔG for the cell reaction at 298 K:

$Mg_{(s)} / Mg^{2+}_{(0.1M)} // Cu^{2+}_{(0.01M)} / Cu_{(s)}$

Given $E^{\circ}_{\text{cell}} = -2.71V$

$1F = 96,500C$

Watch Video Solution

50. Define the following terms :

Specific conductance

Watch Video Solution

51. Define the following terms :

Kohlrausch's law

Watch Video Solution

52. The resistance of a conductivity cell containing 0.001 M KCl solution at 298 K is 1500 ohm. What is the cell constant and molar conducti vity of 0.001 M KCI solution, if the conductivity of this solution is $0.146 \times 10^{-3} \text{ohm}^{-1} cm^{-1}$ at 298 K?

Watch Video Solution

53. Explain why :

Fluorine has lower electron affinity than chlorine.

Watch Video Solution

54. Why is red phosporus less reactive than white phosphorus?

Watch Video Solution

55. Give reasons for the following:

(i) Oxygen is a gas but sulpher is a solid.

(ii) O_3 acts as a powerful oxidising agent.

(iii) BiH_3 is the strongest reducing agent amongst all the hydrides of Groups 15 elements.

Watch Video Solution

56. Draw the structures of the following molecules :

(i) XeF_6

(ii) $H_2S_2O_7$

Watch Video Solution

57. Draw the structures of the following:

IF_7

Watch Video Solution

Watch Video Solution

58. Explain why:

Interhalogen compounds are more reactive than the related elemental halogens.

Watch Video Solution

59. Explain why:

Sulphur exhibits tendency for catenation but oxygen does not.

Watch Video Solution

60. Explain why:

On being slowly passed through water, PH_3 forms bubbles but NH_3 dissolves.

Watch Video Solution

Watch Video Solution

61. Complete and balance the following reactions :

$P_4 + H_2SO_4 \rightarrow$ _____ +____ +_____

Watch Video Solution

62. Complete and balance the following reactions :

$Ag + \underset{(\text{dilute})}{HNO_3} \rightarrow$ _____ +____ +_____

Watch Video Solution

63. Give balanced equations for the following reactions :

Acetaldehyde reacts with hydrogen cyanide.

Watch Video Solution

64. Give balanced equations for the following reactions :

Acetone reacts with phenyl hydrazine.

Watch Video Solution

65. Give balanced equations for the following reactions :

Acetic acid is treated with ethanol and a drop of conc. H_2SO_4.

Watch Video Solution

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

Acetone and benzaldehyde.

Watch Video Solution

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

Phenol and benzoic acid.

Watch Video Solution

68. Give an example (equation) for each of the following name reactions :

Aldol condensation.

Watch Video Solution

69. Write chemical equations to illustrate the following name reactions :

Cannizzaro's reaction

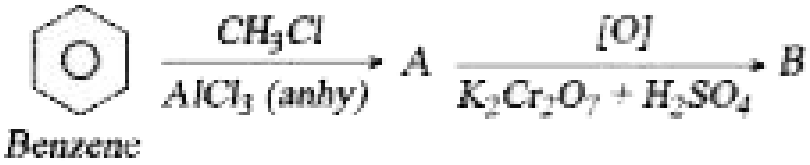
Watch Video Solution

70. Give balanced equations for the following name reactions :

Benzoin condensation

Watch Video Solution

71. Identify the compounds A and B in the given reactions :



Watch Video Solution

72. Identify the compounds A and B in the given reactions :

$$CH_3COCH_3 \xrightarrow[HNO_3\,(\text{conc.})]{[O]} A \xrightarrow{PCl_5} B$$

Watch Video Solution

Question Answer The Following Questions

1. Which trivalent ion has maximum size in the lanthanoid series i.e., Lanthanum ion $\left(La^{3+}\right)$ to Lutetium ion $\left(Lu^{3+}\right)$?

(At. no. of lanthanum = 57 and lutetium = 71)

Watch Video Solution

2. Explain why:

Cu^{+} is diamagnetic but Cu^{2+} is paramag netic. $(Z = 29)$

Watch Video Solution

3. When a coordination compound $CoCl_3.6NH_3$ is mixed with $AgNO_3$, 3 moles of AgCI are

precipitated per mole of the compound. Write

(i) Structural formula of the complex

(ii) IUPAC name of the complex

Watch Video Solution

4. Calculate the boiling point of urea solution when 6 g of urea is dissolved in 200 g of water.

(K_b for water = 0·52 K kg mol^{-1}, boiling point of pure water = 373 K, mol.wt. of urea = 60)

Watch Video Solution

5. Identify the compounds A, B, C and D in the given reaction :

$$HC \equiv CH \xrightarrow[Hg^{2+} / H_2SO_4]{H_2O} A \xrightarrow[K_2Cr_2O_7 + H_2SO_4]{[O]} B \xrightarrow{Ca(OH)_2} C \xrightarrow[\text{dry distillation}]{\text{Heat}} D$$

Watch Video Solution