



CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

CHEMISTRY-2020

Question

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

(iodoform, volume, mass, haloform, gram equivalent, chloroform, carbylamine, sp^3d^2 , high, coke, d^2sp^3 , low, gram mole, carbon monoxide)

Equivalent conductivity is the conducting power of all the ions furnished by one _____ of an electrolyte present in a definite _____ of the solution.



Watch Video Solution

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

(iodoform, volume, mass, haloform, gram equivalent, chloroform, carbylamine, sp^3d^2 , high, coke, d^2sp^3 , low, gram mole, carbon monoxide)

Bleaching powder, on treatment with ethanol or acetone gives _____.

This is an example of _____ reaction.



Watch Video Solution

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

(iodoform, volume, mass, haloform, gram equivalent, chloroform, carbylamine, sp^3d^2 , high, coke, d^2sp^3 , low, gram mole, carbon monoxide)

Outer orbital complexes involve _____ hybridization and are spin complexes.

 [Watch Video Solution](#)

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

(iodoform, volume, mass, haloform, gram equivalent, chloroform, carbylamine, sp^3d^2 , high, coke, d^2sp^3 , low, gram mole, carbon monoxide)

Zinc oxide is reduced by _____ at 1673K to form zinc and _____.

 [Watch Video Solution](#)

5. Select the correct alternative from the choices given:

The packing efficiency of simple cubic structure, body centered cubic structure and face centered cubic structure respectively is :

A. 52.4 % , 74 % , 68 %

B. 74 % , 68 % , 52.4 %

C. 52.4 % , 68 % , 74 %

D. 68 % , 74 % , 52.4 %

Answer: 3

 [Watch Video Solution](#)

6. Select the correct alternative from the choices given:

When acetone is treated with Grignard's reagent, followed by hydrolysis, the product formed is :

A. Secondary alcohol

B. Tertiary alcohol

C. Primary alcohol

D. Aldehyde

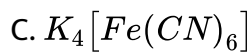
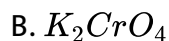
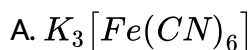
Answer: 2



Watch Video Solution

7. Select the correct alternative from the choices given:

Which of the following electrolytes is least effective in causing flocculation of positively charged ferric hydroxide sol?



Answer: 4



Watch Video Solution

8. On heating an aliphatic primary amine with chloroform and ethanolic potassium hydroxide, the organic compound formed is:

A. Alkyl isocyanide

B. Alkanol

C. Alkanal

D. Alkyl cyanide

Answer: 1

 [Watch Video Solution](#)

9. Match the following:

(i) Silicon and
phosphorous

(a) Acetaldehyde

(ii) Tollen's test

(b) Xenon hexafluoride

(iii) Arrhenius equation

(c) n-type of semiconductors

(iv) Distorted octahedral structure

(d) Frequency factor

 [Watch Video Solution](#)

10. (a) An element has atomic mass 93 g mol^{-1} and density 11.5 g cm^{-3} . If the edge length of its unit cell is 300 pm, identify the type of unit cell.

(b) Write any two differences between amorphous solids and crystalline solids.

 [Watch Video Solution](#)

11. The density of copper is 8.95 g cm^{-3} . It has a face centred cubic structure. What is the radius of copper atom?

Atomic mass Cu = 63.5 g mol^{-1} $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$

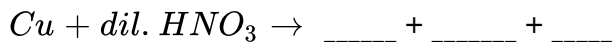
 [Watch Video Solution](#)

12. Complete the following chemical equation :



 [Watch Video Solution](#)

13. Complete and balance the following chemical equations :



 [Watch Video Solution](#)

14. Write the chemical equation for the reaction of glucose with bromine water.

 [Watch Video Solution](#)

15. Write the zwitter ion structure of glycine.

 [Watch Video Solution](#)

16. How do antiseptics differ from disinfectants ? Give one example of each.

 [Watch Video Solution](#)

17. Name a substance that can be used as an antiseptic as well as a disinfectant.

 [Watch Video Solution](#)

18. An alloy of gold (Au) and cadmium (Cd) crystallises with a cubic structure in which gold atoms occupy the corners and cadmium atoms fit into the face centers. What is the formula of this alloy?

 [Watch Video Solution](#)

19. Ethylamine is soluble in water whereas aniline is almost insoluble. Why?

 [Watch Video Solution](#)

20. State reasons for the following:

Aliphatic amines are stronger bases than aromatic amines.

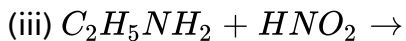
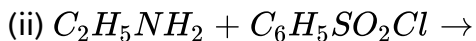
 [Watch Video Solution](#)

21. Complete and balance the following equations:



 [Watch Video Solution](#)

22. Complete the following reaction equations :

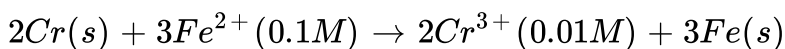


 [Watch Video Solution](#)

23. Draw the structure of xenon tetrafluoride molecule. State the hybridisation of the central atom and the geometry of the molecule.

 [Watch Video Solution](#)

24. Calculate e.m.f of the following cell at 298 K :



$$\text{Given : } E^\circ (Cr^{3+} | Cr) = -0.74V \quad E^\circ (Fe^{2+} | Fe) = -0.44V$$

 [Watch Video Solution](#)

25. Calculate the degree of dissociation (α) of acetic acid if its molar conductivity (Λ_m) is $39.05 \text{ Scm}^2\text{mol}^{-1}$

Given

$$\lambda^\circ (H^+) = 349.6\text{cm}^2\text{mol}^{-1} \quad \text{and} \quad \lambda^\circ (CH_3COO^-) = 40.9\text{Scm}^2\text{mol}^{-1}$$

 [Watch Video Solution](#)

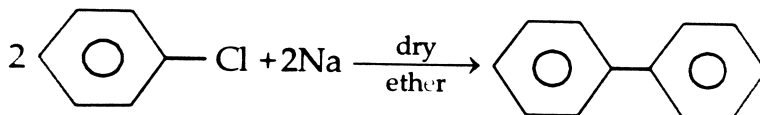
26. Name an important ore of silver. How is silver extracted from its sulphide ore? Give balanced chemical equations involved in the extraction of pure silver.

 [Watch Video Solution](#)

27. How do you convert :

(i) Chlorobenzene to biphenyl ltr (ii) Propene to 1-iodopropane

(iii) 2-bromobutane to but 2-ene



 [Watch Video Solution](#)

28. How will you convert the following:

Propene to 1-bromopropane

 [Watch Video Solution](#)

29. How will you convert the following:

Chlorobenzene to aniline

 [Watch Video Solution](#)

30. What is especially observed when a beam of light is passed through a colloidal solution?

 [Watch Video Solution](#)

31. Explain what is observed when

- (i) KCl, an electrolyte, is added to hydrated ferric, oxide sol,
- (ii) an electric current is passed through a colloidal solution,
- (iii) a beam of light is passed through a colloidal solution.

 [Watch Video Solution](#)

32. Explain what is observed when :

An electrolyte ($AlCl_3$) is added to a colloidal solution of arsenious sulphide (As_2S_3).

 [Watch Video Solution](#)

33. How will you convert the following: (Give balanced equation)

Benzoyl chloride to benzaldehyde.

 [Watch Video Solution](#)

34. How will you convert the following: (Give balanced equation)

Methyl chloride to acetic acid.

 [Watch Video Solution](#)

35. How will you convert the following: (Give balanced equation)

Acetic acid to methane.

 [Watch Video Solution](#)

36. A ketone A (C_4H_8O) which undergoes Iodoform reaction gives compound B on reduction. B on heating with conc. H_2SO_4 at 443 K gives a compound C which forms ozonide D. On hydrolysis with Zn dust gives only E. Identify the compounds A to E. Write the Iodoform reaction with compound A.

 [Watch Video Solution](#)

37. A first order reaction is 50% completed in 30 minutes at 300 K and in 10 minutes at 320 K, Calculate the activation energy of the reaction ($R = 8.314 \text{ JK mol}^{-1}$.)

 [Watch Video Solution](#)

38. Explain giving reason:

(i) Transition metals and their compounds generally exhibit a paramagnetic behavior.

(ii) The chemistry of actinoids is not so smooth as that of lanthanoids.

 [Watch Video Solution](#)

39. Explain the following:

There is an increase in density of elements from titanium ($Z = 22$) to copper ($Z = 29$) in the 3d series of transition elements.

 [Watch Video Solution](#)

40. Explain the following:

$K_2Cr_2O_7$ acts as a powerful oxidising agent in acidic medium.

 [Watch Video Solution](#)

41. The elevation in boiling point when 0.30 g of acetic acid is dissolved in 100 g of benzene is $0.0633^{\circ}C$. Calculate the molecular weight of acetic acid from this data. What conclusion can you draw about the molecular state of the solute in the solution?

(Given K_b for benzene = $2.53K \text{ kg mol}^{-1}$, at wt. of C=12, H=1, O=16)

 [Watch Video Solution](#)

42. Determine the osmotic pressure of a solution prepared by dissolving 0.025 g of K_2SO_4 in 2 litres of water at $25^{\circ}C$, assuming that K_2SO_4 is completely dissociated.

($R = 0.0821 \text{ Lit-atm K}^{-1}\text{mol}^{-1}$, mol. wt. of $K_2SO_4 = 174\text{g mol}^{-1}$)

 [Watch Video Solution](#)

43. An aqueous solution of a non-volatile solute freezes at 272.4 K, while pure water freezes at 273.0 K. Determine the following:

(Given $K_f = 1.86\text{K kg mol}^{-1}$, $K_b = 0.512\text{K kg mol}^{-1}$ and vapour pressure of water at $298\text{ K} = 23.756\text{ mm of Hg}$)

(1) The molality of solution

(2) Boiling point of solution

(3) The lowering of vapour pressure of water at 298 K

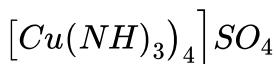
 [Watch Video Solution](#)

44. A solution containing 1.23g of calcium nitrate in 10g of water, boils at 100.975°C at 760 mm of Hg . Calculate the vant Hoff factor for the salt at this concentration.

(K_b for water = $0.52\text{ K kg mol}^{-1}$, mol. wt. of calcium nitrate = 164 g mol^{-1}).

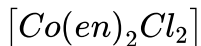
 [Watch Video Solution](#)

45. Write the IUPAC names of the following complexes :



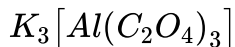
 [Watch Video Solution](#)

46. Write the IUPAC names of the following complexes :



 [Watch Video Solution](#)

47. Write the IUPAC names of the following complexes :



 [Watch Video Solution](#)

48. With reference to the coordination complex ion $[Fe(H_2O)_6]^{2+}$

answer the following: (at. no. of Fe=26)

Give the IUPAC name of the complex ion.

 [Watch Video Solution](#)

49. With reference to the coordination complex ion $[Fe(H_2O)_6]^{2+}$

answer the following: (at. no. of Fe=26)

What is the oxidation number of the central metal atom?

 [Watch Video Solution](#)

50. With reference to the coordination complex ion $[Fe(H_2O)_6]^{2+}$

answer the following: (at. no. of Fe=26)

How many unpaired electrons are there in the complex ion?

 [Watch Video Solution](#)

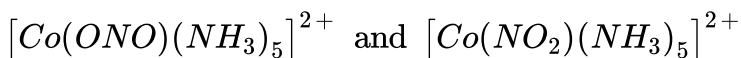
51. With reference to the coordination complex ion $[Fe(H_2O)_6]^{2+}$

answer the following: (at. no. of Fe=26)

State the type of hybridisation of the complex ion.

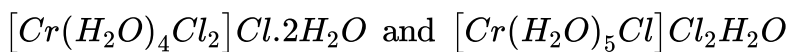
 [Watch Video Solution](#)

52. Name of the type of isomerism exhibited by the following pairs of compounds :



 [Watch Video Solution](#)

53. Name of the type of isomerism exhibited by the following pairs of compounds :



 [Watch Video Solution](#)

54. Name of the type of isomerism exhibited by the following pairs of compounds :



 [Watch Video Solution](#)

55. Using the valence bond approach, predict the shape, hybridisation and magnetic behaviour of $[Ni(CO)_4]$. (at. no. of Ni = 28)

 [Watch Video Solution](#)

56. Give balanced chemical equations for the following reactions :

Phenol is treated with ice cold alkaline solution of benzene diazonium chloride.

 [Watch Video Solution](#)

57. Give balanced equations for the following reaction :

Diethyl ether with phosphorus pentachloride.

 [Watch Video Solution](#)

58. Give balanced chemical equations for the following reactions :

Ethyl alcohol is treated with thionyl chloride.

 [Watch Video Solution](#)

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

Ethanol and dimethyl ether

 [Watch Video Solution](#)

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

1-propanol and 2-propanol.

 [Watch Video Solution](#)

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

Williamson's synthesis

 [Watch Video Solution](#)

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

Esterification reaction

 [Watch Video Solution](#)

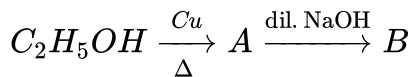
63. Give an example (equation) for each of the following name reactions

:

Reimer-Tiemann reaction.

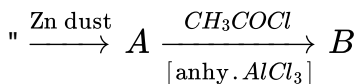
 [Watch Video Solution](#)

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



 [Watch Video Solution](#)

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



 [Watch Video Solution](#)

Question Answer The Following Question

1. What is the common name of the polymer obtained by the polymerisation of caprolactam? Is it addition polymer or condensation

polymer?

 [Watch Video Solution](#)

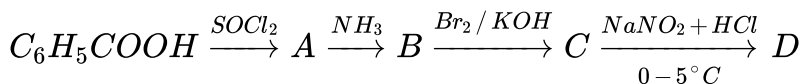
2. Why Zn^{2+} ions are colourless while Ni^{2+} ions are green and Cu^{2+} ions are blue in colour?

 [Watch Video Solution](#)

3. The molar conductivity of NaCl, CH_3COONa and HCl at infinite dilution is 126.45, 91.0 and 426.16 $\text{ohm}^{-1}\text{cm}^2\text{mol}^{-1}$ respectively. Calculate the molar conductivity (λ_m^∞) for CH_3COOH at infinite dilution.

 [Watch Video Solution](#)

4. Identify the compounds A, B, C and D.





[Watch Video Solution](#)