



CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

SAMPLE PAPER 05 (CHEMISTRY)

Multiple Choice Questions

1. The most unsymmetrical and symmetrical systems are, respectively:

A. Tetragonal, cubic

B. Triclinic, cubic

C. Rhombohedral, hexagonal

D. Orthorombic, cubic

Answer: B



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2. The concentration units independent of temperature would be:

A. Normality

B. Molarity

C. Molality

D. Mass-volume percent

Answer: C



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3. The standard reduction potential of Pb and Zn electrodes are -0.126 and -0.763 volts

respectively . The e.m.f of the cell

$Zn|Zn^{2+} (0.1M)| | Pb^{2+} (1M)Pb$ is

A. 0.637 V

B. lt0.637V

C. gt0.637V

D. 0.889V

Answer: D



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4. The Ores that are concentrated by Froth flotation method

A. Carbonates

B. Sulphides

C. Oxides

D. Phosphates

Answer: B



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5. The geometry of $XeOF_2$

A. Pyramidal

B. T-Shaped

C. Octahedral

D. Tetrahedral

Answer: B



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6. Formation of alkanes by the action of zinc on alkyl halide is called:

- A. Wurtz reaction
- B. Cannizzaro's reaction
- C. Claisen reaction
- D. Frankland Reaction

Answer: D



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7. Phenol is more acidic than ethyl alcohol because:

A. Phenoxide ion is more resonance stabilized than alcohol

B. There is more hydrogen bonding in phenol than ethyl alcohol

C. Ethoxide ion is less resonance stabilized than ethyl alcohol

D. Phenol has higher boiling point than ethyl alcohol

Answer: A



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8. Close packing is maximum in the crystal which is:

A. BCC

B. FCC

C. Simple cubic

D. All of these

Answer: B



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9. The number of moles of NaCl in 3 litres of 3M solution is:

A. 1

B. 3

C. 9

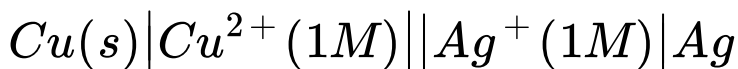
D. 27

Answer: C



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10. The emf of the cell:



is 0.46V. The standard reduction potential for

Ag^+ / Ag is 0.80V. The standard reduction

potential of Cu^{2+} / Cu is:

A. -0.34

B. 1.26

C. -1.26

D. 0.34

Answer: D



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11. Copper pyrite ore is concentrated by:

A. Electromagnetic Method

B. Froth Floatation Process

C. Gravity Method

D. All of these

Answer: B



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12. In compound, OF_2 the oxidation state for 'O' is:

A. +2

B. -2

C. +4

D. + 6

Answer: A



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13. Which of the following is not correct about White Phosphorous (P_4) ?

A. Six P-P single bonds

B. Four P-P single bonds

C. Four lone pair of electrons

D. PPP angle is 60°

Answer: B



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14. Vicinal and gem dihalides can be distinguished by:

A. aq. KOH

B. Zn dust

C. alc. KOH

D. Br_2 water

Answer: A



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15. Reimer Tiemann reaction is useful for the preparation:

A. Benzaldehyde

B. Salicylaldehyde

C. Toluene

D. Acetophenone

Answer: B



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16. In fcc arrangement of P and Q atoms, where P atoms are at the corners of the unit cell, Q atoms at the face centres and two atoms are missing from two corners in each unit cell, then the formula of the compound is :

A. P_2O_3

B. P_4Q

C. P_4Q_5

D. PQ_4

Answer: D



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17. For the depression in freezing point experiment, the correct statement(s) is/are:

A. Vapour pressure of the solution is less than that of pure solvent

B. Vapour pressure of the solution is more than that of pure solvent

C. Only solute molecule solidifies at freezing point

D. Only solvent molecules solidifies at freezing point

Answer: A



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18. E_{cell}° and ΔG^0 are related as:

A. $\Delta G^0 = nFE_{\text{cell}}^{\circ}$

B. $\Delta G^0 = -nFE_{\text{cell}}^{\circ}$

C. $\Delta G^0 = -nFE_{\text{cell}}^{\circ}$

D. $\Delta G^0 = mFE_{\text{cell}}^{\circ}$

Answer: D



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19. Coke is used in metallurgical process chiefly

are:

A. flux

B. Reducing Agent

C. Slag

D. Oxidising agent

Answer: D



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20. Out of all halogen hydracids, the weakest is:

A. HI

B. HBr

C. HF

D. HCl

Answer: C



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21. The IUPAC name of

$CH_3 - CH = CHCH_2Br$ is :

- A. 1-Bromo-2 butene
- B. 1-Bromo-2 butene
- C. 2-butene-1- bromide
- D. Fiting reaction

Answer: A



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22. Glycerol reacts with $KHSO_4$, to give:

- A. Acrolein
- B. Tartaric acid
- C. Oxalic acid
- D. Formaldehyde

Answer: A



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23. Schottky defect in crystals is observed when

- A. Equal number of cations and anions are missing from the lattice
- B. Equal number of cations and anions are missing from the lattice
- C. Ions leaves its normal site and occupies an interstitial site
- D. Density of crystal is increased

Answer: A



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24. The osmotic pressure of equimolar solutions of $BaCl_2$, $NaCl$, and glucose follow the order

A. $BaCl_2 > NaCl > \text{glucose}$

B. $BaCl_2 > \text{glucose} > NaCl$

C. $\text{glucose} > BaCl_2 > NaCl$

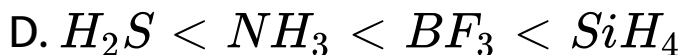
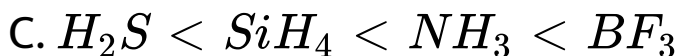
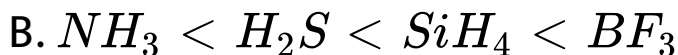
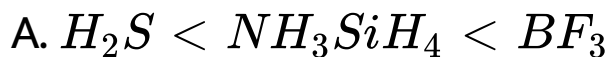
D. $NaCl > BaCl_2 > \text{glucose}$

Answer: A



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25. The correct order of bond angles (smallest first) in:



Answer: A



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26. 1, 2 dichloroethene is known to exhibit:

- A. Optical isomerism
- B. Geometrical isomerism
- C. Metamerism
- D. Tautomerism

Answer: D



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27. Which of the following is not correctly matched with its IUPAC name?

A. $CHF_2CBrClF$ 1-Bromo-1-chloro-1, 2, 2-

trifluoroethane

B. $(CCl_3)_3CCl$ 2-(Trichloromethyl)-1, 1,2,3,

3-heptachloropropane

C. $CH_3C(p - ClC_6H_4)_2CH(Br)CH_3$ 2-

Bromo-3, 3-bis (4-chlorophenyl) butane



2-

Bromo-1-methylpropylbenzene

Answer: B



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28. Benzenediazonium chloride on reaction with phenol in weakly basic medium gives :

A. Diphenyl ether

B. p-hydroxyazobenzene

C. Chlorobenzene

D. Benzene

Answer: B



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29. 1-propanol and 2-propanol can be best distinguished by :

A. Oxidation with $KMnO_4$ followed by reaction with Fehling solution

B. Oxidation with acidic dichromate followed by reaction with Fehling solution

C. Oxidation by heating with copper followed by reaction with Fehling solution

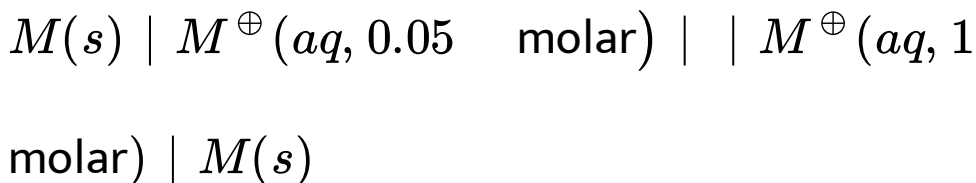
D. Oxidation with cone. H_2SO_4 followed by reaction with Fehling solution

Answer: C



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30. A simple model for a concentration cell involving a metal M is



For the above electrolytic cell, the magnitude of the cell potential is $|E_{cell}| = 70mV$.

For the above cell

(a) $E_{cell} < 0, \Delta G > 0$

(b) $E_{cell} > 0, \Delta G < 0$

(c) $E_{cell} < 0, \Delta G^{c-} > 0$

(d) $E_{cell} > 0, \Delta G^{c-} < 0$

A. $E_{\text{cell}} < 0, \Delta G > 0$

B. $E_{\text{cell}} > 0, \Delta G < 0$

C. $E_{\text{cell}} < 0, \Delta G^0 > 0$

D. $E_{\text{cell}} > 0, \Delta G^0 < 0$

Answer: B



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31. If the 0.05 molar solution of M^+ is replaced by a 0.0025 molar solution, then the

magnitude of the cell potential would be (

$E_{\text{cell}} = 70\text{mV}$) :

A. 35 mV

B. 70 mV

C. 140 mV

D. 700 mV

Answer: C



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32. The maximum radius of sphere that can be fitted in the octahedral hole of cubical closed packing of sphere of radius r is:

A. $0.732r$

B. $0.155r$

C. $0.235r$

D. $0.414r$

Answer: D



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33. The structure of Na_2O , crystal is:

A. $ZnCl_2$ type

B. NaCl type

C. Antifluorite

D. CsCl type

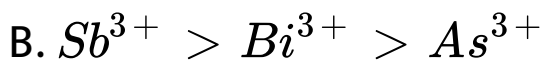
Answer: C



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34. Ionic radii (in Å) of As^{3+} , Sb^{3+} and Bi^{3+}

follow the order :



Answer: D



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35. Which of the following elements is most metallic?

A. P

B. As

C. Sb

D. Bi

Answer: D



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36. An increase in equivalent conductance of a strong electrolyte with dilution is mainly due to:

A. Increased ionic mobility of ions

B. 100 percent electrolyte ionisation with natural dilution

C. Increase in both ion numbers and ionic mobility

D. A rise in ion counts

Answer: C



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37. Aqueous solution of which of the following compounds is the best conductor of electric current ?

A. Acetic acid

B. Hydrochloric acid

C. Ammonia

D. Fructose

Answer: B



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38. How many kinds of space lattices are possible in a crystal?

A. 32

B. 230

C. 14

D. 7

Answer: C



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39. The structure of MgO is similar to $NaCl$.

What is the co-ordination number of Mg ?

A. 6

B. 12

C. 8

D. 10

Answer: A



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40. A standard solution of KNO_3 is used to make salt bridge, because

A. Velocity of K^+ is more than NO_3^-

B. velocity of K^+ is less than NO_3^-

C. Velocity of K^+ is equal to NO_3^-

D. KNO_3 is soluble in water

Answer: C



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41. Which of the following electrolytic solutions with the given concentrations containing the same solute has the least value of specific conductance?

A. 0.2N

B. 0.02N

C. 2N

D. 0.002N

Answer: D



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42. Which of the following is not correct?

A. Gibb's energy is an extensive property

B. Electrode potential or cell potential is an
intensive property

C. Electrical work = - ΔG

D. If half reaction is multiplied by a numerical factor, the corresponding E_0 , value is also multiplied by the same factor.

Answer: D



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43. The highest electrical conductivity of the following aqueous solution is of

A. 0.1 M acetic acid

B. 0.1 M chloroacetic acid

C. 0.1 M fluoroacetic acid

D. 0.1 M difluoroacetic acid

Answer: D



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44. Phosgene is commonly known as:

A. Thionyl chloride

B. Carbonyl chloride

C. Carbon dioxide and phosphine

D. Phosphoryl chloride

Answer: B



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45. The reaction of tertiary butyl bromide with sodium methoxide gives

A. Isobutane

B. Isobutylene

C. Tert-butyl methyl ether

D. Sodium tert butoxide

Answer: D



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46. Choose the correct order of acidity:

A. p-nitrophenol > p-cresol > phenol

> p-chlorophenol

B. p-nitrophenol < p-cresol < phenol
< p-chlorophenol

C. phenol > p-cresol > p-nitrophenol
> p-chlorophenol

D. phenol > p-chlorophenol > p-
nitrophenol > p-cresol

Answer: A



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47. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is

- A. Acid permagnate
- B. Acidic dichromate
- C. Chromic anhydride
- D. None of these

Answer: C



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48. The significance of leaching in the extraction of aluminium is

A. It helps removing the impurities like

SiO_2 , Fe_2O , etc. from the bauxite ore

B. It converts the ore into oxide

C. It reduces melting point of the ore

D. It eliminates water from bauxite

Answer: A



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49. Which of the following metals cannot be obtained by reduction of its metal oxide by aluminium?

A. Cr

B. Mn

C. Fe

D. Mg

Answer: D



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50. The density of a metal which crystallises in bcc lattice with unit cell edge length 300 pm and molar mass 50 g mol^{-1} will be

A. 10 g cm^{-3}

B. 14.2 g cm^{-3}

C. 6.15 g cm^{-3}

D. 9.32 g cm^{-3}

Answer: C



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51. Which of the following will have metal deficiency defect?

A. NaCl

B. FeO

C. KCl

D. ZnO

Answer: B



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52. 1-Propanol and 2-propanol can be distinguished by:

- A. Oxidation with alkaline $KMnO_4$
- B. Oxidation with acidic dichromate
- C. Oxidation by heating with copper
- D. Oxidation with sulphuric acid

Answer: C



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53. Propanone is obtained by dehydrogenation of:

- A. 2-propanol
- B. Propyl chloride
- C. Ethyl chloride
- D. Methyl chloride

Answer: A



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54. Butane nitrile can be prepared by heating

A. Propyl chloride with KCN

B. Propyl alcohol with KCN

C. Butyl chloride with KCN

D. Butyl alcohol with KCN

Answer: A



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55. 1 – Chlorobutane on reaction with alcoholic potash gives:

A. But-1-ene

B. But-2-ene

C. Butan-1-ol

D. Butan-2-ol

Answer: A



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56. In the extraction of chlorine by electrolysis of brine

A. Oxidation of Cl^- ion to chlorine gas occurs

B. Reduction of Cl^- ion to chlorine gas occurs.

C. For overall reaction ΔG V has negative value.

D. A displacement reaction takes place

Answer: B



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57. In the metallurgy of aluminium

- A. Al^{3+} is oxidised to $Al(s)$
- B. Graphite anode is oxidised to carbon monoxide and carbon dioxide.
- C. Oxidation state of oxygen changes in the reaction at anode.
- D. Oxidation state of oxygen changes in the overall reaction involved in the process.

Answer: B



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58. The number of second nearest Na^+ ion in NaCl structure is:

A. 12

B. 6

C. 8

D. 4

Answer: A



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59. What is the coordination number of hcp and ccp?

A. 6,6

B. 8,6

C. 12,6

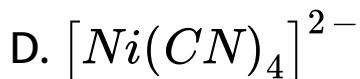
D. 12,12

Answer: D



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60. Which of the following has regular tetrahedral structure?



Answer: A



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61. Which of the following forms salt like KHX_2 ?

A. HF

B. HCl

C. HBr

D. HI

Answer: A



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62. Diethyl ether on heating with conc. HI gives two moles of:

- A. Ethanol
- B. Iodoform
- C. Ethyl iodide
- D. Methyl iodide

Answer: C



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63. Ethers are quite stable towards:

- A. Oxidising Agent
- B. Grignard reagent
- C. Sodium metal
- D. Base

Answer: A



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64. Which of the following solutions shows positive deviation from Raoult's law ?

A. Acetone + Aniline

B. Acetone + Ethanol

C. Water + Nitric acid

D. Chloroform + Benzene

Answer: B



65. The osmotic pressure of a solution can be increased by

A. Increasing the volume

B. Increasing the number of solute molecules

C. Decreasing the temperature

D. Removing semipermeable membrane

Answer: B



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66. Statement I: p-Nitrophenol is a stronger acid than o-nitrophenol.

Statement II: Intramolecular hydrogen bonding makes the o-isomer weaker than p-isomer.

A. Assertion is false but reason is true

B. Assertion is true but reason is false

C. Both assertion and reason are true, but reason is not a true explanation for assertion

D. Both assertion and reason are true and reason is the correct explanation for assertion

Answer: D



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67. Assertion: SN_2 , reactions proceed with inversion of configuration.

Reason: SN_2 , reactions occur in one step.

A. Assertion is false but reason is true

B. Assertion is true but reason is false

C. Both assertion and reason are true, but reason is not a true explanation for assertion

D. Both assertion and reason are true and reason is the correct explanation for

assertion

Answer: B



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68. Statement-1 :Xenon forms fluorides.

Statement-2 :5 d-orbitals are available in xenon for valence shell expansion.

A. Assertion is false but reason is true

B. Assertion is true but reason is false

C. Both assertion and reason are true, but reason is not a true explanation for assertion

D. Both assertion and reason are true and reason is the correct explanation for assertion

Answer: C



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69. Assertion: $HClO_4$ is a stronger acid than $HClO_3$.

Reason: Oxidation state of chlorine in $HClO_4$ is +7 and in $HClO_3$ is +5.

A. Assertion is false but reason is true

B. Assertion is true but reason is false

C. Both assertion and reason are true, but reason is not a true explanation for assertion

D. Both assertion and reason are true and reason is the correct explanation for assertion

Answer: B



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70. Assertion (A) Hydrometallurgy involves dissolving the ore in a suitable reagent followed by precipitating by a more electropositive metal .

Reason (R) Copper is extracted by hydrometallurgy

A. Assertion is false but reason is true

B. Assertion is true but reason is false

C. Both assertion and reason are true, but reason is not a true explanation for assertion

D. Both assertion and reason are true and reason is the correct explanation for assertion

Answer: B



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