



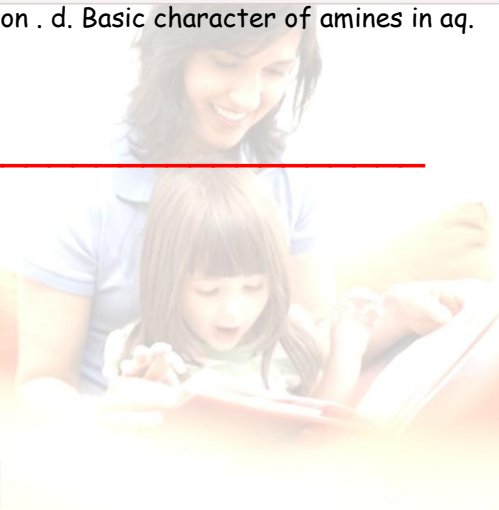
## IMPORTANT QUESTIONS OF CHEMISTRY - XII

- Why the window glass of the old buildings looks milky?
- In a rock salt structure, how many  $\text{Na}^+$  ions occupy second nearest neighbour location of  $\text{Na}^+$  ions?
- Why is co-ordination number of 12 not found in ionic crystals?
- Stability of a crystal is reflected in the magnitude of its melting point'. Comment
- If  $\text{NaCl}$  is doped with  $10^{-3}$  mol %  $\text{SrCl}_2$ , What is the concentration of cation vacancies?
- Why does zinc oxide exhibit enhanced electrical conductivity on heating?
- Aluminum crystallizes in a cubic close packed structure. Its metallic radius is 125 pm.
  - What is the length of the side of the unit cell?
  - How many unit cells are there in  $1.00 \text{ cm}^3$  of aluminum?
- Arrange the following solution in the increasing order of their osmotic pressure
  - 34.2 g/lit sucrose
  - 60 g/lit urea ( $\text{NH}_2\text{CONH}_2$ )
  - 90 g/lit glucose
  - 58.5 g/lit sodium chloride
- What is the cause of abnormal molecular mass. Explain.
- Cutting onions taken from the fridge is more comfortable than cutting onion lying at room temperature. Explain why.
- Calculate the percentage composition in terms of mass of a solution obtained by mixing 300 gm of 25% and 400 g of a 40% solution by mass?
- What is de-icing agent? How does it work?
- Why oxygen mixed with helium is used by deep sea divers?
- How many mL of a 0.1 M  $\text{HCl}$  are required to react completely with 1 g of  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$  containing equimolar amounts of the two?
- 2 g of  $\text{C}_6\text{H}_5\text{COOH}$  dissolved in 25g of benzene shows a depression in freezing point equal to 1.62 K,  $k_f$  5.15  $\text{K kg mol}^{-1}$ . What is the percentage association of acid if it forms double molecules (dimer) in solution?
- (A) Classify the following solutions: (a) acetone +  $\text{CH}_2\text{Cl}_2$  (b) ethyl alcohol +  $\text{H}_2\text{O}$   
 (B) What is the mole fraction of solute in 2.5 m aq. Solution
- Explain the DELTA formation.
- Why  $\text{LiCl}$  show red colour when heated in  $\text{Li}$  vapour?
- Calculate the equivalent conductivity of 1 M  $\text{H}_2\text{SO}_4$  solution, if its conductivity is  $26 \times 10^{-2} \text{ ohm}^{-1}\text{cm}^{-1}$ .  
 (At. Wt. of sulphur = 32). Also write the relation b/n equivalent conductivity & molar conductivity.
- Predict the products of electrolysis of the following:
  - An aq. solution of  $\text{AgNO}_3$  with silver electrodes
  - An aq. Solution of  $\text{AgNO}_3$  with platinum electrodes
- Explain what is observed when
  - a beam of light is passed through a colloidal sol.
  - an electrolyte,  $\text{NaCl}$  is added to hydrated ferric oxide sol.
- Define (a) Gold number (b) Adsorption isobar with graph.
- The time required for 10% completion of a 1st order reaction at 298 K is equal to that required for its 25% completion at 308 K. If the value of A is  $4 \times 10^{10} \text{ s}^{-1}$ . Calculate k at 318 K &  $E_a$ .
- Why only one isomer is possible during the rxn of  $(\text{CH}_3)_4\text{C}$  with  $\text{Cl}$  in presence of UV light or heat?
- Convert 1. Propanoic acid to Iodoethane 2. Benzoic acid to toluene 3. Bromoethane to N-methyl ethanamine

27. Why wurtz rx<sup>n</sup> of t-Butylbromide is not possible ?
28. How will you prepare salicylic acid from benzene
29. What happens when -
- n-butyl chloride is treated with alcoholic KOH.
  - Methyl bromide is treated with sodium in presence of dry ether.
  - Methyl chloride is treated with KCN
  - Chlorobenzene is subjected to hydrolysis.
30. Three electrolytic cells A, B, C containing solutions of ZnSO<sub>4</sub>, AgNO<sub>3</sub> and CuSO<sub>4</sub>, respectively are connected in series. A steady current of 1.5 amperes was passed through them until 1.45 g of silver deposited at the cathode of cell B. How long did the current flow? What mass of copper and zinc were deposited?
31. Give Antifluorite structure with example.
32. An element has d of 19.35 gm/c.c. and length of side of unit cell is 316 pm. The unit cell is b.c.c. How many atoms of element does 50 gm of element contain ?
33. Define (a) Antiferroelectricity (b) Piezoelectricity
34. How many formula units are there in a unit cell of NaCl ?
35. How many unit cells are there in a 1.0 g cube shaped ideal crystal of NaCl?
36. Analysis shows that nickel oxide has formula NiO<sub>0.98</sub>O<sub>1.00</sub>. What fractions of the nickel exist as Ni<sup>2+</sup> and Ni<sup>3+</sup> ions?
37. The density of KBr is 2.75 g / cc . The edge length of unit cell is 654 pm . Predict the type of unit cell .
38. Why does ZnO exhibit enhanced electrical properties.
39. Classify the following solid - (a) (NH<sub>4</sub>)<sub>3</sub>PO<sub>4</sub> ( b ) Plastic
40. Define - ( a ) Dislocation ( b ) Doping ( covalent solid )
41. 0.01 molol aqueous solution of K<sub>3</sub>[Fe(CN)<sub>6</sub>] freezes at -0.062°C. What is the apparent percentage of dissociation ? (k<sub>f</sub> for water = 1.86 K kg mol<sup>-1</sup>)
42. What happen when to the AgCl solid Fe<sup>+2</sup> ions are added. Explain?
43. How can blood be purified ? Explain the process.
44. Define Auto catalysis
45. Why higher order reaction are not possible?
46. Which out of order and molecularity is affected by temperature? Give differences b/n molecularity and Order.
47. 50% of reaction is completed in 16min. What fraction of the reaction occurs in 32 min.?
48. Why are cimetidine & ranitidine better antacids than sodium hydrogencarbonate or magnesium or aluminium hydroxide ?
49. a. What is tincture of iodine & what is its use?  
b. What are the main constituents of dettol?
50. Why cane sugar is non reducing ? explain
51. Why glucose & fructose form same osazone. Explain.
52. Define - (a) Mutarotation (b) Zwitter ion (c) gene (d) codon
53. An optically active compound having molecular formula C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is found in two isomeric forms (A) and (B) in nature. When (A) and (B) are dissolved in water they show the following equilibrium. (A) Equilibrium mixture
- What are such isomers called?
  - Can they be called enantiomers? Justify your answer.
  - Draw the cyclic structure of isomer (A)
54. (a) Why cannot vitamin C be stored in our body?  
(b) The two strands in DNA are not identical but are complementary. Explain. \_
55. List the reactions of glucose which cannot be explained by its open chain structure.
56. Write a short note on the synthesis of proteins.
57. What is crystal field splitting energy? How does the magnitude of CFSE decide the actual configuration of d orbitals in a coordination entity?
58. . Account for the following:
- Aspirin drug helps in the prevention of heart attack.
  - What are antihistamines? Give two examples.
  - While antacids & antiallergic drugs interfere with function of histamines, why do these not interfere with function of each other ?

59. (a) Give the cleansing action of soap.  
 (b) What are biodegradable & non-biodegradable detergents? Give examples
60. Complete the following reaction:  
 a.  $\text{CH}_3\text{OH} + \text{CO} \xrightarrow{\text{Rh}}$       b.  $(\text{CH}_3)_3\text{COH}$  in presence of Cu at 573 K
61. Explain how does the -OH group attached to a carbon of benzene ring activates it towards electrophilic substitution?
62. How is glycerol obtained as a by-product of soap industry? Write the equation of nitration of glycerol?
63.  $\text{Ph-OH} + \text{Br}_2 \xrightarrow{\quad}$       (aq) b. Convert Ethene to propanol
64. Write chemical tests to distinguish b/n 3-pentanone and 2-pentanone.
65. An organic compound 'A'  $\text{C}_8\text{H}_6$  on treatment with dilute  $\text{H}_2\text{SO}_4$  containing mercuric sulphate gives compound B, which can also be obtained from a reaction of benzene with acid chloride in presence of  $\text{AlCl}_3$ . 'B' on treatment with  $\text{I}_2$  in aq. KOH gives C and yellow compound 'D'. Identify A, B, C and D. Give the chemical reactions involved.
66. Write the complete reaction for conversion Toluene to Benzaldehyde stating the conditions necessary.
67. Convert :
- a. Acetylene to acetic acid . b. Acetaldehyde to lactic acid c. Toluene to Benzene
68. How are following conversion done ?
- a. 1-propanol to 1-bromo propane    b. 1-chloropropane to 1-propanol  
 c. 2-methyl-2-pentene to 2-methyl-2-pentanol    d. Ethene to ethanol  
 e. Bromo methane to methyl magnesium bromide    f. Chlorobenzene to phenol  
 g. Chlorobenzene to Phenol
69. Describe the following:

- a. Trans-esterification    b. Hoffmann bromamide    c. Carbyl amine reaction .    d. Basic character of amines in aq. Medium.



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