CHEMISTRY

BOOKS - R G PUBLICATION

H.S. Question papers of AHSEC,2019

Exercise

1. Which of the following lattices has the highest packing efficiency?simple cubic or closed packed (ccp) lattice

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2. Define molality of a solution.
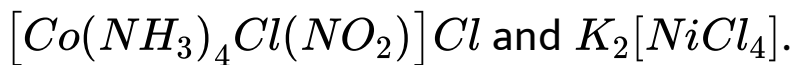
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3. For a zero order reaction will the molecularity be equal to zero? Explain.

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4. In the first transition series of elements, which element shows highest oxidation state?

5. Write the IUPAC names of

$$[Co(NH_3)_4Cl(NO_2)]Cl \text{ and } K_2[NiCl_4].$$

6. Give one example of globular protein.

7. Fill in the blanks: The curve showing the variation of absorption with pressure at constant temperature is called_____.

8. What are the monomers of Buna-S rubber?

9. What is meant by positive deviation from Raoult's law? Explain why this deviation is observed.

10. Calculate the mass of compound ($molar\,mass = 256\,gmol^{-1}$) to be dissolved in 75 g of benzene to lower its freezing point by 0.48 K $(Kf = 5.12\,Kkgmol^{-1})$.

11. 1.0 g of a nonelectrolyte solute dissolved in 50g of benzene lowered the freezing point of benzene by 0.40 K. The freezing point depression constant

of benzene is 5.12 K kg mol. Find the molar mass of the solute.

12. State Faraday's first law. How much charge in terms of Faraday is required for the reduction of 1 mole of Cu^{2+} to Cu?

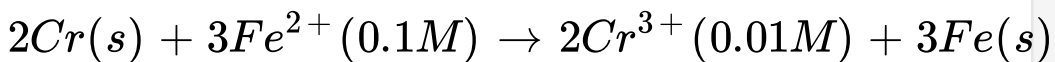**13.** Define molar conductivity of an electrolytic solution. How does molar conductivity vary with

concentration for weak electrolyte?

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

$$2Cr(s) + 3Fe^{2+}(0.1M) \rightarrow 2Cr^{3+}(0.01M) + 3Fe(s)$$

E^0 (Cr^(3+)/Cr) = -0.074V&E^0 (Fe^(2+)/Fe)= -0.44V

15. What type of a battery is the lead storage battery? Write the anode and the cathode reactions

and the overall reaction occurring in a lead storage battery.

16. For a reaction $A + B \rightarrow P$, the rate is given by - $Rate = [A][B]^2$ How is the rate of reaction affected if the concentration of B,is doubled?

17. For a reaction $A + B \rightarrow P$, the rate is given by - $Rate = [A][B]^2$ What is the overall order of

reaction if A is present in large excess?

18. For a reaction: $2NH_3(g) \xrightarrow{Pt} N_2(g) + 3H_2(g)$

Rate = K, Write the order and molecularity of this reaction.

19. For a reaction: $2NH_3(g) \xrightarrow{Pt} N_2(g) + 3H_2(g)$

Rate = K, Write the unit of k.

20. What are alloys? Name the metals used for the formation of bronze.

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21. Zn^{2+} salts are colourless while Cu^{2+} salts are coloured. Give reason.

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22. Calculate the number of unpaired electrons in Cr^{3+} and V^{3+} ions.

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23. How will you convert the following? Give chemical equations only. Ethane to bromoethene

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24. How will you convert the following? Give chemical equations only. Benzene to biphenyl

25. How will you convert the following? Give chemical equations only. Aniline to chlorobenzene

26. Give reasons : n-Butyl bromide has higher boiling point than t-Butyl bromide.

27. Why racimic mixture is optically inactive?

28. What are ambident nucleophiles? Give two examples of it. Give reason for the higher boiling point of ethanol in comparison to methoxymethane.

29. Aniline does not undergo Friedel-Crafts reaction. why?

30. A compound forms hexagonal close packed (hcp) structure. What is the total number of voids in 0.5 mol of it? How many of these are tetrahedral void?

31. A compound is formed by two elements M and N. The elements N forms ccp and atoms of element M occupy $1/3rd$ of tetrahedral voids. What is the formula of the compound.

32. Calculate the efficiency of packing in case of a metal crystal for simple cubic.

33. What will be the effect of temperature on rate constant?

34. A first order reaction has a rate constant of $10^{-2}s^{-1}$. How much time will be taken for 20g of

the reactant to be reduced to 5g?

35. Give reason why a finely divided substance is more effective as an adsorbent.

36. What is an adsorption isotherm? In reference to Freundlich adsorption isotherm write the expression for absorption of gases on solids in the form of an equation.

37. Explain the role of the following in the processes mentioned: Depressant in the forth floatation process.

38. Describe the role of the following in the processes mentioned: Limestone in the metallurgy of iron.

39. Why the noble gases have very low boiling points?

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40. Copper does not dissolve in HCI while it does dissolve in HNO_3

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41. Explain the following with an example : Kolbe's reaction.

42. Explain the following with an example : Reimer-Tiemann reaction.

43. What happens when- Cyclohexanecarbaldehyde reacts with PhMgBr and then H_3O^+.
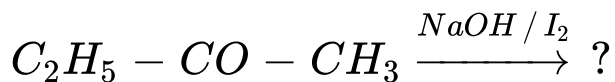
44. What happens when- Carbonyl compound is treated with zinc amalgam and concentrated hydrochloric acid.

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45. Write the major and minor product of 'Bromination of anisole in ethanoic acid medium'.
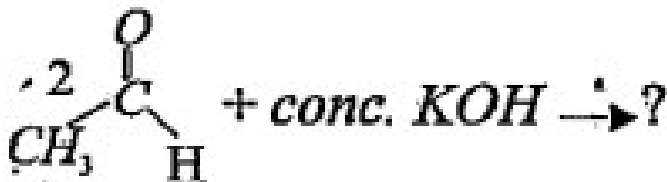
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46. Identify the product of the following reactions :

$$C_2H_5 - CO - CH_3 \xrightarrow{NaOH / I_2} ?$$

47. Identify the product of the following reactions :

$$\underset{CH_3}{\overset{\cdot 2}{\underset{}{}}}\overset{O}{\overset{\|}{C}}\underset{H}{} + conc.\ KOH \longrightarrow ?$$

48. Give one chemical test to distinguish between the following pairs of compounds : Methylamine and dimethylamine

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49. Give one chemical test to distinguish between the following pairs of compounds : Aniline and benzylamine

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50. Explain the following: Ethylamine is soluble in water where as aniline is not soluble in water

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51. Account for the following: Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide.

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52. Answer the following questions : In which classes, the polymers are classified on the basis of molecular forces?

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53. Justify the following: Sleeping pills are recommended to patient suffering from sleeplessness but it is not advisable to take them without consulting the doctor.

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54. What are tranquilizers?

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55. Name one chemical responsible for the antiseptic property of dettol.

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56. Answer the following : What happens when sulphur dioxide gas is passed through acidified potassium permanganate solution? Write equation.

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57. Draw the structure of the following molecules and mention their shapes: XeF_4

58. Answer the following :Complete the following reactions :- $PCl_3 + H_2O \rightarrow$?

59. Answer the following :Complete the following

reactions :- $XeF_6 + H_2O \rightarrow$?

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60. Answer the following :Complete the following

reactions :- $P_4 + SO_2Cl_2 \rightarrow$?

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61. H_2S acts only as reducing agent while SO_2 acts

as an oxidising as well as reducing agent. Why?

62. Describe the manufacture of ammonia by Haber's process with favourable conditions.
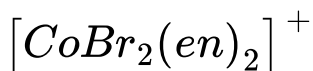
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63. Answer the following questions: Specify the oxidation numbers of the metals in the following coordination entities: $[Co(H_2O)(CN)(en)_2]^{2+}$

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64. Specify the oxidation numbers of the metals in the following coordination entities: $[CoBr_2(en)_2]^+$

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65. Specify the oxidation numbers of the metals in the following coordination entities: $[PtCl_4]^{2-}$

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66. Specify the oxidation numbers of the metals in the following coordination entities: $K_3[Fe(CN)_6]$

67. What are carbohydrates? Give the general formula of carbohydrates. Why are polysaccharides called non-sugars?