



CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

SAMPLE QUESTION PAPER -2

Question

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

(increases, decreases, efficient, same as, 68, non-efficient, greater than, 74, less than, sp^3d^3 , sp^3d^2 , octahedral, distorted octahedral, remains same)

Both accp and hcp are _____ close packing and occupy about _____ % of the available space.



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

(increases, decreases, efficient, same as, 68, non-efficient, greater than, 74, less than, sp^3d^3 , sp^3d^2 , octahedral, distorted octahedral, remains same)

The molar conductance of a solution _____ with dilution, while its specific conductance _____ with dilution.



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

(increases, decreases, efficient, same as, 68, non-efficient, greater than, 74, less than, sp^3d^3 , sp^3d^2 , octahedral, distorted octahedral, remains same)

The geometry of XeF_6 molecule is ___ and the hybridization of Xe atom in the molecule is _____



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

(increases, decreases, efficient, same as, 68, non-efficient, greater than, 74, less than, sp^3d^3 , sp^3d^2 , octahedral, distorted octahedral, remains same)

The acidic strength of phenol is _____ ethyl alcohol but _____ nitro phenol.



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5. Complete the statement by selecting the correct alternative from the choices given :

The molal freezing point constant of water is

1.86K kg mol^{-1} . Therefore, the freezing point of 0.1M NaCl lution in water is expected to be :

A. -1.86°C

B. -0.372°C

C. -0.186°C

D. $+0.372^{\circ}\text{C}$

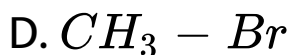
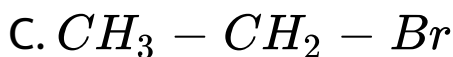
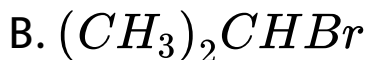
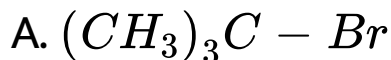
Answer:



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6. Complete the statement by selecting the correct alternative from the choices given :

Which among the following reacts fastest by SN_2 reaction.



Answer:



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7. Complete the statement by selecting the correct alternative from the choices given :

When acetaldehyde is treated with Grignard reagent followed by hydrolysis, the product formed is :

- A. Primary alcohol
- B. secondary alcohol
- C. carbixylic acid
- D. Tertiary alcohol

Answer:



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8. Complete the statement by selecting the correct alternative from the choices given :

Which of the following ores can be concentrated by froth flotation process :

A. Haematite

B. Calamine

C. Zinc blende

D. Bauxite

Answer:



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9. Match the following

- | | |
|-------------------------|--------------------------|
| (i) Disaccharide | (a) Smoke |
| (ii) Arrhenius equation | (b) Condensation polymer |
| (iii) Dacron | (c) Activation energy |
| (iv) Aerosols | (d) Sucrose |



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10. Answer the question:

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



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11. Answer the question:

Write the IUPAC name of the complex

$[Cr(NH_3)_4Cl_2]^+$. Which type of isomerism will be exhibited by it?



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12. Answer the question:

Why do the transition elements have higher enthalpies of atomisation? In 3d series (Sc to Zn), which element has the lowest enthalpy of atomisation and why?



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13. Answer the question:

Write balanced chemical equations for Carbylamine reaction and Diazotization reaction.



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14. Identify the reaction order from the rate constant:

$$k = 2.3 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$$



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15. Identify the reaction order from the rate constant:

$$k = 3 \times 10^{-4} \text{ s}^{-1}$$



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16. Differentiate between an antiseptic and a disinfectant.



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17. Define invert sugar.



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18. Write two differences between 'order of reaction' and 'molecularity of reaction'.



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19. Write the names of the monomers of the polymer:

Nylon-6



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20. Write the names of the monomers of the polymer:

Buna-N



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21. Explain the amphoteric behaviour of amino acids.



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22. Write the mechanism of acid dehydration of ethanol to yield ethene.



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23. How will you distinguish between the following pair of compounds? Giving one good chemical test: ethanol and phenol.



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24. How is phenol converted to benzoic acid?

Explain with the help of balanced chemical equations.



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25. A substance decomposes by following first order kinetics. If 50% of the compound is decomposed in 120 minutes, how long will it take for 90% of the compound to decompose?



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26. Calculate the amount of $CaCl_2$ (molar mass = 111 g mol^{-1}) which must be added to 500 g of water to lower its freezing point by 2 K, assuming $CaCl_2$ is completely dissociated. (K_1 for water = $1.86 \text{ K kg mol}^{-1}$).



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27. An element with density 10 g cm^{-3} forms a cubic unit cell with edge length of 3×10^{-8}

cm. What is the nature of the cubic unit cell if the atomic mass of the element is 81g mol^{-1} ?



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28. Give reason for the observation:

Physisorption decreases with an increase in temperature.



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29. Give reason for the observation:

Addition of alum purifies water.



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30. Give reason for the observation:

Brownian movement stabilizes colloidal solutions.



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31. A solution containing 0.5 g of KCl dissolves in 100 g of water and freezes at $-0.24^{\circ}C$. Calculate the degree of dissociation of the salt. (K_t for water = $1.86^{\circ}C$).



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32. What type of isomers are $[Co(NH_3)_3Br]SO_4$ and $[Co(NH_3)_5SO_4]Br$? Give a chemical test to distinguish between the two isomers.





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33. Write the structures of optical isomers of the complex ion $[Co(en)_2Cl_2]^+$



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34. Explain why :

Transition metals exhibit variable oxidation states,



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35. Explain why :

Zr ($Z = 40$) and Hf ($Z = 72$) have almost identical radii,



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36. Explain why :

Transition metals and their compounds act as a catalyst.



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37. Arrange the following as directed:

Increasing order of basic strength :

Aniline, p-nitroaniline and P toluidine.



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38. Arrange the following as directed:

Decreasing order of basic strength in gas phase

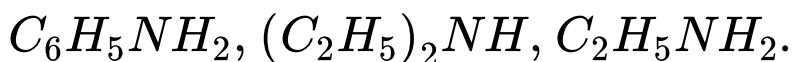
$C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ and NH_3



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39. Arrange the following as directed:

Increasing order of solubility in water :



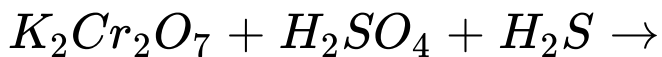
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40. Complete the chemical equation :



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41. Complete the chemical equation :



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42. Complete the chemical equation :



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43. How is silver extracted from its ore? Explain the process with relevant equations.



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44. Mention any two factors affecting the electrode potential of a metal.



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45. A current of 10 A is passed for 80 min and 27 seconds through a cell containing dilute sulphuric acid.

How many moles of oxygen gas will be liberated at the anode?



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46. A current of 10 A is passed for 80 min and 27 seconds through a cell containing dilute sulphuric acid.

Calculate the amount of zinc deposited at the cathode when another cell containing $ZnSO_4$ solution is connected in series ($Zn=65$).



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47. Calculate emf of the following cell at 298 K:



[Given $E_{cell}^{\circ} = + 2.72V$, 1 faraday= 96500 C mol⁻¹]



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48. State Faraday's first law of electrolysis. Calculate the charge required in terms of Faraday for the reduction of 1 mole of Cu^{2+} to Cu



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49. Account for

Interhalogens are more reactive than halogens.



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50. Account for

N_2 is less reactive at room temperature.



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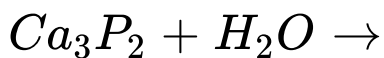
51. Account for

Reducing character increases from NH_3 to BiH_3 .



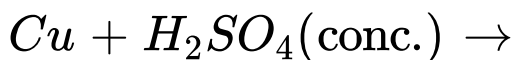
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52. Complete the chemical equation:



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53. Complete the chemical equation:



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54. Explain why

PCI_5 exists but NCI_5 does not.



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55. Explain why

Fluorine is a stronger oxidising agent than chlorine.



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56. Explain why

Bond enthalpy of F_2 is less than that of Cl_2



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57. Complete and balance the reaction



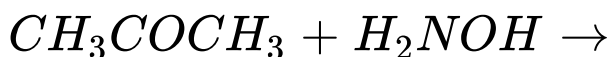
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58. Complete and balance the reaction



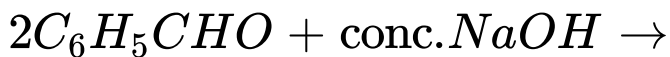
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59. Write the product(s) of the reaction :



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60. Write the product(s) of the reaction :



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61. Write the product(s) of the reaction :



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62. Give one chemical test each to distinguish between the pairs of compounds:

Benzaldehyde and Benzoic acid



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63. Give one chemical test each to distinguish between the pairs of compounds:

Propanal and Propanone



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64. Write the chemical equations to illustrate the reaction :

Wolff-Kishner reduction.



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65. Write the chemical equations to illustrate the reaction :

Aldol condensation.



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66. Write the chemical equations to illustrate the reaction :

Cannizzaro reaction.



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67. Account for

CH_3CHO is more reactive with HCN than CH_2COCH_3 .



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68. Account for

Carboxylic acids are stronger acids than phenol.



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