CHEMISTRY

BOOKS - ACCURATE PUBLICATION

SOLVED MODEL TEST PAPER-1

Section A Multiple Choice Questions

1. Which of the following solution has highest boiling point ?

A. 0.01m glucose

B. 0.01m K_2SO_4

C. 0.01 M KNO_3

D. 0.01 M Urea

Answer: C

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2. Hinsberg reagent is

A. $C_6H_5SO_3H$

B. C_6H_5NO

C. $C_6H_5SO_2Cl$

D. $C_6H_5N_2Cl$

Answer: C

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3. $CH_3CH_2OH \xrightarrow[413K]{H_2SO_4\,(conc.)}$

A. $CH_2 = CH_2$

B. $CH_3CH_2 - O - CH_2 - CH_3$

C. $C_2H_5OCH_3$

D. $CH_3CH_2CH_2CH_3$

Answer: A

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4. Which is most basic?

A. CH_3NH_2

B. $(CH_3)_2NH$

C. $(CH_3)_3N$

D. $C_6H_5NH_2$

Answer: B

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5. The standard emf of a galvanic cell involving cell reaction with n = 2 is formed to be . 0.295 V at $25^\circ C$. The equilibrium constant of the reaction would be :

A. 1.0×10^{10}

B. 2.0×10^{11}

C. 4.0×10^{12}

D. 1.0×10^{2}

Answer: A

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6. The two solutions A and B are separated by semipermeable membrane. If the solvent flows from A to B :

A. A is more concentrated than B

B. A is less concentrated than B

C. Both A and B are of same concentration

D. None of these.

Answer: B

7. Define aqueous solution ?

A. decrease in molality

B. decrease in molarity

C. decrease in mole fraction

D. decrease in mass % age.

Answer: B

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8. Which law states the relation between solubility of gas in liquid at constant temperature and external pressure ?

A. Raoult's law

B. van't Hoff Boyle's law

C. Henry's law

D. van't Hoff Charle's law

Answer: C

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9. General Electronic Configuration of noble gasesis :

A. ns^2np^3

B. ns^2np^6

C. ns^2np^5

D. ns^2np^4

Answer: B

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10. Which of the following lanthanide oxide is used for making coloured goggles ?

A. Gadolinium oxide

B. Cerium oxide

C. Neodymium oxide

D. none of these

Answer: C

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11. Namethe type of isomerism exhibited bythe following pair of isomers. $\left[Cr(H_2O)_6\right]Cl_3$ and $\left[Cr(H_2O)_5Cl\right]Cl_2.\ H_2O$

A. link age isomerism

B. hydrate isomerism

C. Ligand isomerism

D. none of these

Answer: B

12. The formula of the complex tris (ethylenediamine)cobalt(III) sulphate is :

A. $\left[Co(en)_2SO_4\right]$

B. $\left[Co(en)_3SO_4\right]$

C. $\left[Co(en)_3\right]SO_4$

D. $[Co(en)3]_2(SO_4)_3$

Answer: D

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13. When a mixture of calcium acetate and calcium formate is distilled, the product formed is:

A. Formaldehyde

B. Acetaldehyde

C. Acetone

D. None of these

Answer: B

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14. CH_3CHO and $C_6H_5CH_2CHO$ can be distinguised chemically by :

A. Benedict's test

B. Iodo form test

C. Tollen's reagenttest

D. Fehling's solution test

Answer: B

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15. Which of the following reactions will not result in the formation of C - C bond ?

A. Cannizzaro reaction

B. Wurtz reaction

C. Reimer-Tiemann Reaction

D. Friedal Crafts Reaction

Answer: B

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16. Which of the following reagents may be used to distinguish between phenol and benzoic acid ?

A. Tollen'sreagent

B. Molisch reagent

C. Neutral ferricchloride

D. Aqueous sodiumhydroxide

Answer: C

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17. The number of amino acids found in proteins that a human body can synthesize is

A. 20

B. 10

C. 5

D. 14

Answer: B

18. Which of the following is not a function of proteins?

A. Nail formation

B. Skin formation

C. Muscle formation

D. Providing energy for metabolism

Answer: D

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Section A Passage Based Question

1. Chemical adsorption

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2. Read the given passage and answers following question :

There are mainly two type of adsorption of gases on solids. If accumulation of gases on the surface of solid occurs on account of weak vander waal forces, the adsorption is termed as physical adsorption. When gas molecules or atoms held to solid surface by chemical bonds, adsorption is termed as chemical adsorption. The chemical bonds may be covalent or ionic.

Chemical adsorption involves a high energy of activation therefore it is referred as Activated adsorption. A physical adsorption at low temperature may pass into chemical adsorption temperature is increased.

Which adsorption is known as activated adsorption?

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3. Read the given passage and answers following questions :

There are mainly two type of adsorption of

gases on solids. If accumulation of gases on the surface of solid occurs on account of weak vander waal forces, the adsorption is termed as physical adsorption. When gas molecules or atoms held to solid surface by chemical bonds, adsorption is termed as chemical adsorption. The chemical bonds may be covalent or ionic. Chemical adsorption involves a high energy of activation therefore it is referred as Activated adsorption. A physical adsorption at low temperature may pass into chemical adsorption temperature is increased.

Give conditions of temperature which favours physical adsorption.

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4. Read the given passage and answers following questions :

There are mainly two type of adsorption of gases on solids. If accumulation of gases on the surface of solid occurs on account of weak vander waal forces, the adsorption is termed as physical adsorption. When gas molecules or atoms held to solid surface by chemical bonds,

adsorption is termed as chemical adsorption. The chemical bonds may be covalent or ionic. Chemical adsorption involves a high energy of activation therefore it is referred as Activated adsorption. A physical adsorption at low temperature may pass into chemical adsorption temperature is increased.

What are type of adsorption ?

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5. Read the given passage and answers following questions :

There are mainly two type of adsorption of gases on solids. If accumulation of gases on the surface of solid occurs on account of weak vander waal forces, the adsorption is termed as physical adsorption. When gas molecules or atoms held to solid surface by chemical bonds, adsorption is termed as chemical adsorption. The chemical bonds may be covalent or ionic. Chemical adsorption involves a high energy of activation therefore it is referred as Activated adsorption. A physical adsorption at low temperature may pass into chemical adsorption temperature is increased.

What type of force exist in physical adsorption ?

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Section A True False Based Questions

1. Aniline does not undergo Friedel-Crafts reaction. Explain.

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2. Haloalkanes are soluble in water.

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3. Why formaldehyde is more reactive than Acetone ?

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4. Why Phenols are more acidic than Alcohol ?

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5. In the human body what is the role of (i) seminal vesicles an (ii) prostate gland?(iii) list two functions performed by testes in human beings?

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Section B

1. Most of transition metals show variable oxidation states. Explain

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2. Define ionisation isomerism. Give example. How can you distinguish between the two isomers ?

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3. Briefly explain Linkage Groups.

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4. Write IUPAC name of $K_3\left[Fe(CN)_6\right]$.

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5. Give IUPAC names

$\left[Co(en)_2Cl(NO_2)\right]^+$

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6. Why is Copper considered as transition metal

?

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7. Write the difference between molecularity and order of reaction?

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8. The rate constant for a first order reaction Is 90 s^{-1} .How much time will it take to reduce the concentration of the reactant to $\frac{1}{20^{th}}$ of its Initial value ?

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9. The rate constant for a first order reaction is 60 s^(-1). How much time will it take to reduce the initial concentration of the reactant to its l/16^(th) value?

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10. What is the difference between e.m.f. and potential diffrence?

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11. H_2S is a gas while H_2O is liquid at room temperature? Why ?

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12. Why SF_6 is known but SH_6 is not known ?

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13. Draw the structure of XeO_3. Write its state of hybridisation ?

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14. 18 g of glucose is dissolved in 1 kg of water. At what temperature will the solution boil ? (K_b for water is 0.52 K kg mol^{-1})

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15. How many grams of ethylene glycol (molar mass = 62) should be added to 10 kg of water, so that the resulting solution freezes at $-10^{\circ} C$ (K_f for water = 1.86 K mol^{-1}).

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16. State and explain Hess's law.

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17. Vapour pressure of liquid depends on which factors ?

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Section C

1. The molar conductivities at infinite dilution for sodium acetate, _hydrochloric acid and sodium cholride are 92.5,426.9 and 120.4 Scm^2mol^{-1} respectively at 298 K. Calculate the molar conductivity of acetic acid at infinite dilution.

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2. Explain the following :

Iodine is more soluble in KI solution than in

water.

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3. What are pseudohalogens ? Give example.

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4. Explain Reimer Tiemann reaction with one example.

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5. How will you convert chlorobenzene into phenol ?

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6. Why Phenols are more acidic than Alcohol ?

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7. Why solubility of alcohols in water decreases with increase in molecular mass ?

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8. Why primary alcohols are more acidic than secondary alcohols?

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9. Ethers possess a dipole moment even if the alkyl groups in the molecule are identical. Explain.

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10. A first order reaction takes 23.1 minutes for $50\,\%$ conmpletion. Calculate the time required for 75% completion of this reaction $(\log 2 = 0.\,301), (\log 3 = 0.\,4771)(\log 4 = 0.6021)$

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11. Rate constant for a first order reaction is $60s^{-1}$. How much time will it take to reduce the concentration of the reaction on $\frac{1}{10}$ th of its initial value.

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Section D

1. Write the following reaction:

Wurtz Fittig Reaction

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2. Explain the following reactions:

Balz Schiemann reaction.

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3. Write the following reactions :

Friedel Craft alkylation.

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4. Why solubility of Haloalkanes in water is very low ?

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5. Give one use of freon.

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6. Why are haloarenes more stable than haloalkanes ?

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7. Give the mechanism of substitution nucleophilic bimolecular, S_N^2 reactions.

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8. Define Optical activity.

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9. Transition metals have high melting and boiling points. Why ?

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10. How many unpaired electrons are present in Fe^+3 and Zn^+2.

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11. Why is $La(OH)_3$ more basic than $Lu(OH)_3$?

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12. Why are Mn^{2+} compounds more stable than Fe^{2+} compounds towards oxidation to their +3 state ?

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13. What is Lanthanide contraction ? What is the cause and consequences of Lanthanide contraction ?

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14. Why transition metals show catalytic properties?