CHEMISTRY

BOOKS - ACCURATE PUBLICATION
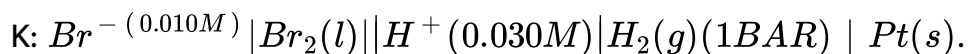
MODEL TEST PAPER-3

Section A Mcq

1. 4L of 0.02 M aqueous solution of NaCI was diluted by adding one litre of water. The molality of the resultant solution is _____

A. 0.004

B. 0.008

C. 0.012

D. 0.016

Answer:

2. Write the Nernst equation and emf of the following cells at 298 K: $Br^{-(0.010M)}|Br_2(l)||H^+(0.030M)|H_2(g)(1BAR) \mid Pt(s)$.

A. zero

B. 0.02955 V

C. 0.76V

D. none of these

Answer:

3. For exothermic dissolution process, solubility of solid with increase in temperature.

A. increases

B. decreases

C. remains same

D. first increases and decreases

Answer:

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4. The molal elevation constant depends upon

A. nature of solute

B. nature of the solvent

C. vapour pressure of the solution

D. enthalpy change

Answer:

5. Solubility of gases in liquids decreases with increase in

A. pressure

B. temperature

C. osmotic pressure

D. density

Answer:

6. The no of S - S bonds in sulphur trioxide trimer (S_3O_9) is

A. three

B. two

C. one

D. zero

Answer:

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7. Misch metal alloy contains about 95 % metals?

A. lanthanides

B. Actinide

C. Both

D. None

Answer:

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8. Primary and secondary valency of Pt in [Pt $(en)_2 Cl_2$] are

A. 4, 4

B. 4, 6

C. 6, 4

D. 2, 6

Answer:

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9. The complex ions

$\left[Co(NH_3)_5(NO_2)\right]^{2+}$ and $\left[Co(NH_3)_5(ONO)\right]^{2+}$ are called

A. Ionization isomers

B. Linkage isomers

C. Co-ordination isomers

D. Geometrical isomers

Answer:

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10. The reaction between alkyl halides and sodium metal is called :

A. addition reaction

B. substitution reaction

C. dehydrohalogenation reaction

D. rearrangement reaction

Answer:

11. By which reaction a Ketone can be converted into hydrocarbon ?
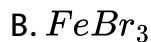
A. Aldol condensation

B. Reimer-Tiemann reaction

C. Cannizzaro reaction
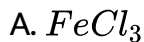
D. Wolf-Kishner reaction

Answer:

12. Which of the following cannot be used in Friedal-craft's reaction?

A. $FeCl_3$

B. $FeBr_3$

C. $AlCl_3$

D. NaCl

Answer:

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13. When dihydroxyacetone react with HIO_4, the product is/are :

A. HCHO

B. HCOOH

C. HCHO and HCOOH

D. HCHO and CO_2

Answer:

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14. Acetaldehyde reacts with NH_3 to form :

A. An acidic solution

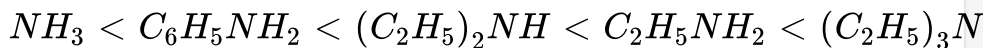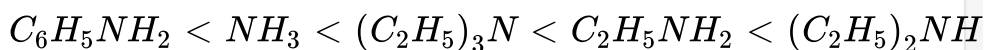B. A basic solution

C. A neutral solution

D. Urotropine

Answer:

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15. The correct order of increasing basicity in aqueous solution is

A.

$$NH_3 < C_6H_5NH_2 < (C_2H_5)_2NH < C_2H_5NH_2 < (C_2H_5)_3N$$

B.

$$C_6H_5NH_2 < NH_3 < (C_2H_5)_3N < C_2H_5NH_2 < (C_2H_5)_2NH$$

C.

$$C_6H_5NH_2 < NH_3 < C_2H_5NH_2 < (C_2H_5)_3N < (C_2H_5)_2NH$$
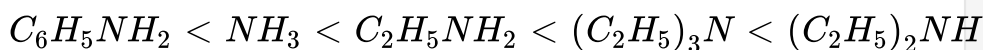
D. None of the above.

Answer:

16. How does aniline react with acetyl chloride in the presence of pyridine ?

A. CH_3NH_2

B. $(CH_3)_2NH$

C. $(CH_3)_3N$
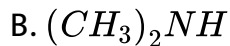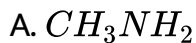
D. None of these.

Answer:

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17. In DNA, the complimentary bases are :

A. adenine and thymine, guanine aud cytosine

B. adenine and thymine , guanine aud uracil

C. adenine and guanine, thymine and cytosine

D. uracil and adenine, cytosine and guanine

Answer:

18. The segment of DNA which acts as the instrumental manual for the synthesis of the protein is:

A. ribose

B. gene

C. nucleoside

D. nucleotide

Answer:

Section A Passage

1. A colloidal solution is a type of mixture which consists of particles whose size varies between 1 and 1000 nanometres. In colloidal solution the particles are distributed evenly. During this process the particles do not settle down. This is one of the best know thing about colloidal solutions. Properties of colloids and their variation are a well-known area ever since the primitive age. The best example to prove their familiarity with us is that we know from very early times that coagulation of milk results in the formation of curd.

Physical properties of colloids

1. The nature of the colloidal solution is heterogeneous i.e. unlike. These solutions dwell with two different phases :

• Dispersed medium Dispersed phase.

2. Despite the fact that colloidal dispersions are unlike in description (nature), yet the dispersed fragments are not detectable by the human eye. This is due to the microscopic size of the particles in the solution.

3. The colour of the colloidal dispersion is determined by particles in the solution based on their size. The wavelengths of light that is absorbed will be longer ifthe size of the particle is large.

4. As a result of its size, the colloidal fragments can easily be passed through a traditional filter paper. However, these particles can be filtered by using membranes such as animal, cellophane, and ultrafilters.

What are colloidal solution particle.

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2. Why pitcher plant show both autotrophic and heterotrophic mode of nutrition?

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What type of phases of colloidal solutions ?

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4. Name one characteristic of an insectivorous plant with example?

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Give the name of membrane used for filteration ?

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Section A True False

1. Name one animal and one plant which show heterotrophic mode of nutrition?

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2. Boiling point of iodobenzene is more than that of bromobenzene.

3. ketones give nucleophilic addition reactions more readily.

4. Bond angle in dimethyl ether is more than water.

Section B Short Answer

1. Why transition metals show catalytic properties?

2. Explain hydrate isomerism with the help of an example.

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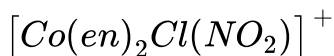**3.** Write a note on Co-ordinate isomerism.

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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. The pores through which traspiration occur in the plants?

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7. Why H_2S is more Acidic than H_2O ?

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8. What is the difference between nucleoside and nucleotide ?

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9. In a reaction when the concentration of reactants is tripled, the rate of reaction becomes 27 times. What is order of reaction ?

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10. Prove that $t_{75} = 2t_{50}$ for 1st order reaction.

11. Find the half life time period for first order reaction.

12. 4 . 0 g of NaOH are contained in one decilitre of a solution. Calculate the molarity and molality of this solution .

(Density of solution $= 1.038 gmL^{-1}$)

13. In winter, the normal temperature in Dharmshala is $-8°$ C Is a 30 % by mass of an aqueous solution of ethylene glycol (molar

mass = 62) suitable for car radiator . K_f for water is 1.86 K/m

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14. Write down the units of resistance, resistivity, conductance and conductivity?

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15. Draw the structure of `XeF2 Write its hybridisation?

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16. Arrange the different oxoacids of chlorine in increasing order of acidic strength?
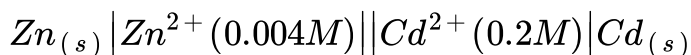
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1. Sulphur show +4 and +6 oxidation stae in their compounds but oxygen can not show these oxidation states.

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2. Calculate the cell e.m.f. and ΔG for the cell reaction at $25°C$ for the cell:

$Zn_{(s)}\left|Zn^{2+}(0.004M)\right|\left|Cd^{2+}(0.2M)\right|Cd_{(s)}$

$E°$ values at $25°C$, $Zn^{2+}/Zn = -0.763V$

$Cd^{+2}/Cd = -0.403V$

$F = 96,500$, $R = 8.314JK^{-1}mole^{-1}$.

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3. Out of alcohol and water, which one is more acidic and why?

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4. Write the following reactions

Benzoylation

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5. Write the following reactions :

Williamson's synthesis

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6. Explain Victor meyer's test for primary alcohol $(1°)$, secondary $(2°)$ and tertiary alcohols $(3°)$.

7. Calculate the half life period of a first order reaction where specific rate constant is K is $200s^{-1}$.

8. The decomposition of N_2O_5 in carbon tetrachloride solution has been found to be first order with respect to N_2O_5 with rate constant, $k - 6.2 \times 10^{-4} s6 - 1$

$$N_2O_5(G) \rightarrow 2NO_2(g) + \frac{1}{2}O_2(g)$$
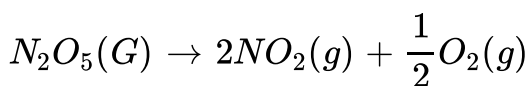
Calculate the rate of reaction when

$$[N_2O_5] = 2.50 mol L^{-1}$$

Section D Long Answer Questions Type Ii

1. Alkyl halides though polar, are immiscible with water, why ?

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2. Out of HCl and $SOCl_2$ which is preferred for converting ethanol into chloroethane ? Explain.

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3. Difference between S_N1 and S_N2 reaction ?

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4. How will you convert :

Methane to ethane

5. How will you convert :

Ethanol to Butane

6. How will you convert :

Propanoic acid to Ethane

7. Write the reactions:

Chlorination of Benzene

8. Write the reactions:

Nitration of Benzene.

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9. Ti^{3+} compounds appear purple. Why?

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

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11. Transition metals form number of interstitial compounds. Explain.

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12. What are the main consequences of lanthanoid contraction ?

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13. Explain :Transition elements exhibit variable oxidation states.

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14. Scandium (z = 21) is a transition element but zinc (z = 30) is not.

Explain.

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