CHEMISTRY

BOOKS - ACCURATE PUBLICATION

MODEL TEST PAPER-4

Section A Mcq

1. Which of the following solution shows maximum depression in freezing point.

A. $0.5MLi_2SO_4$

B. 1M NaCl

C. $0.5MAl_2(SO_4)_3$

D. $0.5MBaCl_2$

Answer:

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2. E° of three metals A, B, C are -1.4 V, + 0.6V, -3.4V respectively. The reducing power of these metals are in order :

A. $A > B > C$

B. $B > C > A$

C. $B > A > C$

D. $C > A > B$

Answer:

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3. Which one of the following binary liquid mixtures exhibits negative deviation from Raoult's law?

A. n-Hexane-n-Heptane

B. Chloroform-Acetone

C. Carbon disulphide - Acetone

D. Bromoethane - Chloroethene

Answer:

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4. Constant boiling mixtures are called

A. ideal solution

B. Azeotropes

C. isotonic solution

D. none of these

Answer:

5. A pressure cooker reduces cooking time because :

A. heat is more evenly distributed.

B. the high pressure tenderises the food

C. the boiling point of food under pressure is elevated.

D. the boiling point of water in cooker is depressed.

Answer:

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6. The boiling point of hydrides of group 16 elements are in the order.

A. $H_2O > H_2S > H_2Te > H_2Se$

B. $H_2Te > H_2Se > H_2S > H_2O$

C. $H_2O > H_2Te > H_2Se > H_2S$

D. $H_2Te > H_2O > H_2S > H_2Se$

Answer:

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7. Which of the following group of transition metals is called coinage metals?

A. Cu, Ag, Au

B. Ru, Rh, Pd

C. Fe, Co, Ni

D. Os, Ir, Pt

Answer:

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8. Which of the following represents chelating ligand?

A. Cl^-

B. DMG

C. OH^-

D. H_2O

Answer:

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9. 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. linkage isomerism

B. hydrate isomerism

C. Ligand isomerism

D. none of these.

Answer:

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10. Arrange the following compounds in increasing order of boiling point :

Propan-1-ol, butan-1-ol, butan-2-ol, pentan-1-ol

A. Propan-1-ol, butan-2-ol, butan-1-ol, pentan-1-ol

B. Propan-l-ol, butan-1-ol, butan-2-ol, pentan-1-ol

C. Pentan-1-ol, butan-2-ol, butan-1-ol, propan-1-ol

D. Pentan-1-ol, butan-1-ol, butan-2-ol, propan-1-ol

Answer:

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11. Give one example of a parasitic plant?

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12. Acetone react with iodine to form iodoform in presence of:

A. $CaCO_3$

B. NaOH

C. KOH

D. $MgCO_3$

Answer:

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13. When glucose react with acetone in acidic medium, the main product is :

A. Laevulic acid

B. Glycosazone

C. Dioxopropylidene glucose

D. None of the above

Answer:

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14. The conversion ofBenzaldehyde into benzyl alcohol is known as:

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15. Consider the following reaction

$C_6H_5NO_2 + Sn/HCl \rightarrow X + C_6H_5COCl \rightarrow Y$ + HCl

What is Y?

A.

B.

C.

D.

Answer:

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16. Hinsberg reagent is

A. $C_6H_5SO_3H$

B. C_6H_5NO

C. $C_6H_5SO_2Cl$

D. $C_6H_5N_2Cl$

Answer:

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17. _____ is produced in the liver which helps to digest the fats from the food.

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18. Name any three characteristics of Amarbel?

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Section A Passage

1. State whether the statement is true or false-

Oxygen is absorbed during photosynthesis.

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2. State whether the statement is true or false-

The product of photosynthesis is a protein.

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3. Read the given passage and answers following questions :

Zeolites are alumino-silicates that are micro-porous in nature. Zeolites have a honeycomb like structure, which makes them shape-selective catalysts. They have an extended 3D-nelwork of silicates in which some silicon atoms are replaced by aluminium atoms, giving them an Al-O-Si framework. The reactions taking place in zeolites are very sensitive to the

pores and cavity size of the zeolites. Zeolites are commonly used in the petrochemical industry. A catalytic reaction which depends upon the pore structure of the catalyst and on the size of the reactant and the product molecules is called shape-selective catalysis. For example, catalysis by zeolites is a shape selective catalysis. The pore size present in the zeolites ranges from 260-740 pm. Thus, molecules having a pore size more than this cannot enter the zeolite and undergo the reaction.

In which chemical industry Zeolites used ?

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Upon which factor a catalytic reaction of shape selective catalyst depends ?

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What is the pore size of Zeolites ?

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Section A True False

1. Phenetol reacts with HI at 373 K to give ethanol and iodobenzene.

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2. Catalytic reduction of carbylamines always gives primary amines.

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3. The intake of food by the humans is called-

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4. The pK_a Value of formic acid is smaller than that of acetic acid.

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5. Both glucose and fructose are reducing sugars.

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Section B Short Answer

1. At 298 K the vapour pressure of pure benzene C_6H_6 is 0.256 bar and vapour pressure of pure toluene, C_6H_8 is 0.925 bar. If the mole fraction of benzene in solution is 0 . 40 , find the total vapour pressure of solution. Also find the mole fraction of toluene in vapour phase

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2. 200 cm^3 of an aqueous solution of a protein contains 1.26g of the protein . The osmotic pressure of such a solution at 300K is found to be 2.7×10^{-3} bar. Calculate the molar mass of the protein (R=0.083 L bar $mol^{-1}K^{-1}$)

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3. Why is Copper considered as transition metal ?

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4. How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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5. Silver atom has completely filled d-orbitals $\left(4d^{10}\right)$ in its ground State. How can you say that it is a transition element ?

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6. What is mutarotation ?

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7. Explain any two types of structural isomerization.

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8. What is the difference between .co-ordination compounds and-Double salt?

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9. What is the difference between instantaneous rate of a reaction and rate constant?

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10. If the rate constant for a first order reaction is k, the time (t) required for completion of 99 % of the reaction is given by

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11. A first order reaction is 15% complete in 20 minutes. How long will it take to complete 60%?

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12. What is the difference between absorption and assimilation?

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13. Account for the following: Among the halogens F_2 is the strongest oxidising agent.

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14. Draw the structure of XeF_2, and what is the state of hybridisation of Xe in it ?

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Section C Long Answer Questions

1. Why do alcohols have higher boiling points than halo-alkanes of the same molecular mass ?

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2. Why alcohols are weaker acids than water ?

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3. Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.

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4. Write the NERNST equation and calculate e.m.f of following cell at 298 K

$Sn(s) / Sn^{2+}(0.050M) / H^{+}(0.020M) / H_2$ (1 atm)

Given $E^0 Sn(s) / Sn^{2+}$ =-0.14V

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5. A first order reaction is 20% complete in the 10 minutes. Calculate the time period for 75% completion of the reaction.

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6. Calculate the time required for the completion of 90% of a reaction of first order kinetics, $t_{\frac{1}{2}} = 44.1$ minutes.

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Section C Long Answer Questions Type Ii

1. Transition metals form alloys with other transition metals. Explain.

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2. Transition elements and their compounds are found to be good catalysts. Give examples.

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3. Briefly explain, why are electronic configuration of lanthanides not known with certainty ?

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4. Why transition metals are generally coloured ?

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5. Explain any two functions of liver?

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6. Describe the location and function of villi?

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7. Write the following reaction:

Wurtz Fittig Reaction

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8. Write the following reactions

Sandmeyer reaction

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9. Write down following name reaction :

Hunsdiecker reaction

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10. Write following name reactions :

Riemer Tiemann reactioin.

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11. Write the following reactions :

Friedel Craft alkylation.

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12. Explain the following reactions :

Ulmann reaction

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13. Alkyl halides react with $AgNO_2$ to give $R-NO_2$not R-ONO.Why?

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