



# CHEMISTRY

## BOOKS - ACCURATE PUBLICATION

### SOLVED MODEL TEST PAPER-2

#### Section A Multiple Choice Questions

1. Which of the following aqueous solutions should have the highest boiling point ?

A. 1.0 M NaOH

B. 1.0 M  $Na_2SO_4$

C. 1.0 M  $NH_4NO_3$

D. 1.0 M  $KNO_3$

**Answer: B**



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2. Primary amines on heating with  $CS_2$  followed by excess of mercuric chloride yields isothiocyanates. The reaction is called

A. Hofmann mustard oil reaction

B. Perkin reaction

C. Fries reaction

D. Diels-Alder reaction

**Answer: A**



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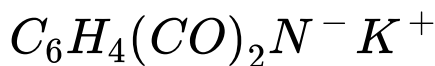
**3.** The source of nitrogen in Gabriel synthesis of amine is \_\_\_\_\_

A. Sodium azide  $NaN_3$

B. sodium nitrite,  $NaNO_2$

C. Potassium cyanide, KCN

D. potassium phthalimide,



**Answer: D**



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4. Find the charge in coulombs on 1g ion of  $N^{-3}$

A.  $2.89 \times 10^5$

B.  $2.10 \times 10^3$

C.  $2.69 \times 10^{-5}$

D.  $2.59 \times 10^{-4}$

**Answer: A**



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5. How many alcohols with molecular formula

$C_4 - H_{10}O$  are chiral in nature ?

A. 1

B. 2

C. 3

D. 4

**Answer: A**



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6. Maximum amount of a solid solute that can be dissolved in a specificd amount of a given liquid solvent does not depend upon

- A. Temperature
- B. Nature of solute
- C. Pressure
- D. Nature of solvent.

**Answer: C**



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7. Which of the following is a colligative property?

A. Melting point

B. Osmotic pressure

C. Freezing point

D. Sublimation temperature

**Answer: B**



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8. At the given temperature, osmotic pressure of a concentrated solution of substances

A. is higher than that of a dilute solution

B. is lower than that of a dilute solution

C. is same as that of a dilute solution

D. None of the above

**Answer: A**



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9. Why  $ICl_3$  is more reactive than  $I_2$  ?

A. High difference in electro negativity

B. Weaker ICl bond

C. Both (a) and (b)

D. None of the above

**Answer: A**



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10. Zr and Hf have same atomic and ionic radii because

- A. both are in same group
- B. of diagonal relationship
- C. of lanthanides contraction
- D. None of the above

**Answer: C**



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11. An ambident ligand is the one which  
.....

A. Is linked to the metal atom at two points.

B. Has 2 donor atoms but only 1 of them has the capacity to form the coordinate bond.

C. Has 2 donor atoms but any of the 2 can form coordinate bond

D. Forms chelaterings.

**Answer: B**



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**12.** The complex in which the metal is bounded to more than one kind of donor groups are called .....

- A. homoleptic complexes
- B. heteroleptic complexes
- C. coordination complexes
- D. chelate complexes

**Answer: B**



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**13. A nucleotide consists of**

- A. carbon sugar
- B. nitrogen containing base
- C. phosphoric acid
- D. All of these

**Answer: D**



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14. DNA has deoxyribose, a base and the third compound is

A. phosphoric acid

B. ribose

C. adenine

D. thymine

**Answer: A**



15. Acetaldehyde cannot exhibit :

- A. Tollen's test
- B. Benedict's test
- C. Lucas test
- D. Iodoform test

**Answer: C**





**16.** Base catalyzed aldol condensation occurs with

A. Propionaldehyde

B. 2,2-dimethylpropionaldehyde

C. Benzaldehyde

D. None of the above

**Answer: A**



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17. Which of the aldehydes is most reactive towards nucleophilic addition?

A.  $\text{HCHO}$

B.  $\text{CH}_3\text{CHO}$

C.  $\text{C}_6\text{H}_5 - \text{CHO}$

D. All are equally reactive

**Answer: A**



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18. Aldehyde and ketones cannot be distinguished by:

A. Molisch's test

B. Tollen's test

C. Benedict's test

D. Schiff's test

**Answer: A**



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## Section A Passage Based Question

1. 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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2. Read the given passage and answers following questions :

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What type of force exist in physical adsorption ?



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**3.** Read the given passage and answers following question :

Thomas Graham in 1861, during his work on diffusion found that certain substances such

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Which types of forces in chemical 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 type of activation energy in physical adsorption ?



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5. Read the given passage and answers following question :

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What type of activation energy in chemical adsorption?



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## Section A True False Type Questions

1. Gabriel phthalimide synthesis is used for the preparation of aromatic primary amines.



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2. Haloalkanes are soluble in water.

A. True

B. False

C.

D.

**Answer:**



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**3. Benzaldehyde cannot undergo Cannizzaro Reaction.**



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**4. Primary alcohols on dehydrogenation give aldehydes.**



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**5. Uracil occurs in DNA and not in RNA.**



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## Section B

1. Zn and Cd are not normally considered as transition metals. Why ?

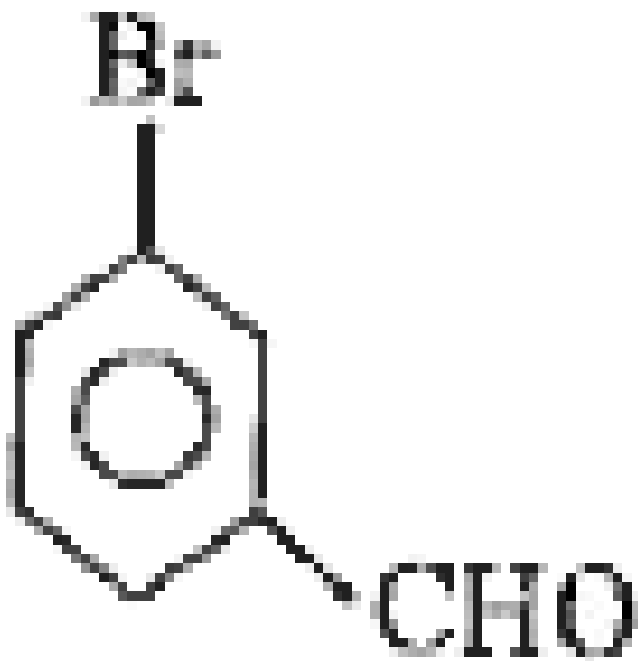


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2. What is the difference between .co-ordination compounds and-Double salt?



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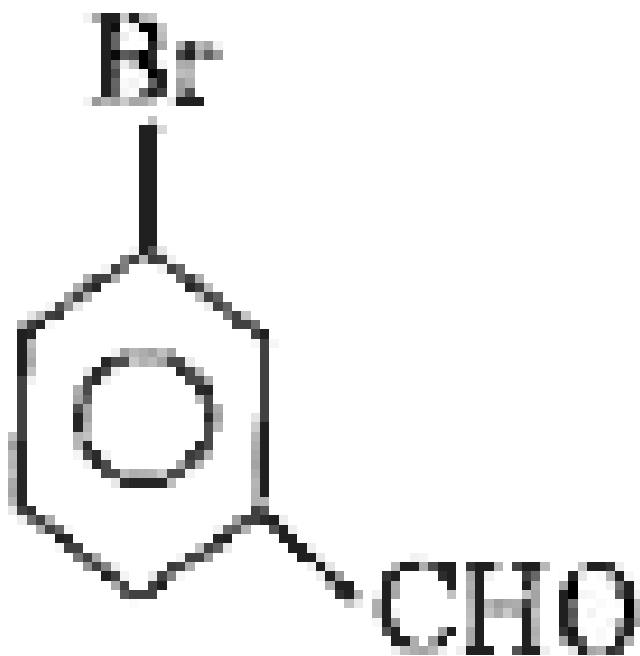
3.

Give IUPAC name:



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4.

Give IUPAC name:



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5. Benzene and toluene form nearly ideal solution . At 313 K the vapour pressure of benzene and toluene are 160 mm and 60 mm of Hg respectively. Calculate the total pressure of the solution made by mixing their equal masses at 313 K.



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6. 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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7. Write four differences between galvanic (or electrochemical) cell and electrolytic cell.



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**8.** Why is dioxygen gas but sulphur a solid?



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**9.** What are the characteristics of the transition elements ?



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**10.** Write the difference between molecularity and order of reaction?





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**11.** What are colligative properties ? Name four such properties.



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**12.** What are the factors affecting the solubility of gas in liquid ?



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**13.** 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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**14.** Calculate two third life of first order reaction having  $K = 5.48 \times 10^{-14} \text{ s}^{-1}$ .



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15. Account for the following: Why the acid strengths of halogen acids increase in the order:  $HF < HCl < HI$  ?



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16. Why does fluorine show anomalous behaviour in its group ?



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1. What happens when  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols are passed over red hot copper ? Give equations.



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2. Write Victor Meyer's test to distinguish between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols ?



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



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4. The reaction  $2A + B + C = D + 2E$  is of first order with respect to A and of second order with respect to B and is of zero order with respect to C

(i) Write down the rate law for the reaction

(ii) What will be the effect of doubling concentration of A, B and C.



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5. Give cell is  $[Ni|Ni^{2+} || Cu^{2+} | Cu]$   
(0.01m) (0.1m)

$$E_{\text{cell}} = 0.59V$$

Write Nernst equation and find  $E_{Ni^{2+} / Ni}^{\circ}$  of cell. (At anode)  $E_{Cu^{2+} / Cu}^{\circ} = 0.39V$



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6. Why fluorine shows -1 oxidation state only whereas other halogens show variable oxidation states ?



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## Section D

1. Explain Swarts reaction.



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2. Explain the following reaction: Friedel Craft  
Acylation



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3. Explain the following reaction: Hunsdicker  
reaction



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4. Write the following reactions :

Friedel Craft alkylation.



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5. Explain Wurtz Fittig reaction.



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6. Difference between Haloalkene and Haloarenes?



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7. What is iodoform test ?



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



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**9.** Why Zr and Hf show similar chemical properties ?



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



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



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