



## CHEMISTRY

### BOOKS - ACCURATE PUBLICATION

### MODEL TEST PAPER-7

#### Section A Mcq

1. The osmotic pressure of 0.2 molar solution of urea at  $27^{\circ}C$  ( $R=0.082$  litre atm mol<sup>-1</sup>K<sup>-1</sup>) is

A. 4.92 atm

B. 1 atm

C. 0.2 atm

D. 27 atm

**Answer:**



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2. If cell potential of standard cell is 0.59 V then equilibrium constant for the cell reaction occurring in the cell at  $25^{\circ}C$  is ( $n = 1$ )

A. 1

B. 10

C.  $10^{10}$

D.  $1/10$

**Answer:**



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3. Which of the following does not show positive deviation from Raoult's law ?

A. Benzene + acetone

B. Acetone + ethanol

C. Acetone + chloroform

D. Water + ethanol

**Answer:**



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4. People add sodium chloride to water while boiling eggs. This is to

A. decrease the boiling point

B. increase the boiling point

C. prevent the breaking of eggs

D. make eggs tasty.

**Answer:**



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**5. Molality of expressed in**

A. grams/litre

B. Litre/moles

C. Moles/litre

D. Mole/kg

**Answer:**



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**6.** The elements of group 16 are called

A. Chalcogens

B. Halogens

C. Pnicogens

D. Noble gases

**Answer:**



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7. Reason of lanthanoid contraction is :

- A. Negligible screening effect of 'f' orbital
- B. Due to d-orbitals
- C. Decreasing nuclear charge
- D. Decreasing screening effect

**Answer:**



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8. The IUPAC name of  $Fe(CO)_5$  is :

- A. pentacarbonyl ferrate (0)
- B. pentacarbonyl ferrate (III)
- C. pentacarbonyl iron (0)
- D. pentacarbonyl iron (II)

**Answer:**



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9. The compound  $Na_2[Fe(CN)_5NO]$  is called



A. sodium pentacyanonitrosoniumferrate(II)

B. sodiumpentacyanonitroferrate(II)

C. sodium nitrosoferrocyanide

D. (a) and (b) both

**Answer:**



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**10.** Victor Meyer test is used to distinguish between different types of

A. Aldehydes

B. Ketones

C. Alcohol

D. Esters

**Answer:**



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**11.** 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:**



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12.  $CH_3CHO$  and  $C_6H_5CH_2CHO$  can be distinguished chemically by :

A. Benedict's test

B. Iodoform test

C. Tollen's reagent test

## D. Fehling's solution test

**Answer:**



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**13.** 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:**



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**14.** The general formula  $C_n H_{2n} O_2$  could be for open chain

- A. Diketones
- B. Carboxylic acids
- C. Diols
- D. Dialdehydes

**Answer:**



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15. Aniline when treated with conc.  $HNO_3$  gives

A. p-Phenylenediamine

B. m-Nitroaniline

C. p-Benzoquinone

D. Nitrobenzene

**Answer:**



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16. Aniline upon heating with conc. $HNO_3$  and conc. $H_2SO_4$

mixture gives:

A. o and p-Nitroanilines

B. m-Nitroaniline

C. a black tarry matter

D. No reaction

**Answer:**



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17. RNA and DNA are chiral molecules, their chirality is due to

- A. chiral bases
- B. chiral phosphate ester units
- C. D-sugar component
- D. L-sugar component

**Answer:**



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**18.** The reason for double helical structure of DNA is operation of

- A. dipole-dipole interactions
- B. hydrogen bonding
- C. electrostatic attractions
- D. Vander Waals' forces

**Answer:**



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1. In 1916 Langmuir proposed theory of adsorption of a gas on the surface of the solid to be made up of elementary sites each of which would adsorb one gas. It is assumed that all adsorption sites are equivalent and the ability of a gas molecule to get bound to any one site is independent whether or not the neighbouring sites are occupied. Additionally, it is also assumed that dynamic equilibrium exists between adsorbed and non adsorbed gas molecule.

Following principles can be obtained from Langmuir adsorption isotherm

The gas adsorbed behaves ideally in a vapour

phase .

Only monolayer adsorption takes place .

The surface of the solid is homogeneous .

There are no lateral interactive force between the adsorbate molecule .

The adsorbed gas molecules are localized .

Who proposed the theory of adsorption of a gas on the surface of the solid?



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2. In 1916 Langmuir proposed theory of adsorption of a gas on the surface of the solid to be made up

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What is the nature of adsorption sites ?



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**3.** In 1916 Langmuir proposed theory of adsorption of a gas on the surface of the solid to be made up of elementary sites each of which would adsorb one gas. It is assumed that all adsorption sites are equivalent and the ability of a gas molecule to get bound to any one site is independent whether or

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Which type of equilibrium exists between adsorbed and non adsorbed gas molecule.



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4. In 1916 Langmuir proposed theory of adsorption of a gas on the surface of the solid to be made up of elementary sites each of which would adsorb one gas. It is assumed that all adsorption sites are equivalent and the ability of a gas molecule to get bound to any one site is independent whether or not the neighbouring sites are occupied. Additionally, it is also assumed that dynamic

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How many layers of adsorption takes place ?



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The adsorbed gas molecules are localized .

How many interactive force between the adsorbate molecule ?



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**Section A True False**

1. Sodium ethoxide can be prepared by the reaction of ethanol with aqueous sodium hydroxide.

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2. In aqueous solution, trimethylamine is more basic than methylamine.

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3. The dipole moment of  $CH_3F$  is larger than that of  $CH_3Cl$ .



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4. Wolff Kishner reduction of acetophenone gives toluene.



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5. Uracil occurs in DNA and not in RNA.



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## Section B Short Answer

1. Commercially available sample of sulphuric acid is 15%  $H_2SO_4$  by weight (density= $1.10\text{g mL}^{-1}$ ) . Calculate the molarity of the solution.



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2. Concentrated  $H_2SO_4$  has a density  $1.9\text{ g/mL}$  and is 99 %  $H_2SO_4$  by mass. Calculate the molarity of the acid



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3. First order reaction is found to have rate constant,  $k = 5.5 \times 10^{-14} \text{ s}^{-1}$ . Find the half life to the reaction.



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4. The thermal decomposition of a compound is first order. If 50 % of the compound is decomposed in 120 minutes, how long will it take for 90 % of this compound decompose?



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5. What is Pseudo first order reaction and gives its example.



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6. Define coordination number , oxidation number, chelates.



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7. Explain the difference between a weak field ligand and a strong field ligand.

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8. Discuss with your teacher and find out how to distinguish between RNA and DNA

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



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10. Why are Lanthanides called inner transition metals.

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

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12. Give the preparation, hybridisation and structure of  $XeF_2$  (Xenon difluoride).

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13. Give the preparation, hybridisation and structure of  $XeF_4$  (Xenon Tetrafluoride)

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14. What is tailing of mercury ?

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## Section C Long Answer Questions

1. Discuss iodoform test. How will you distinguish between propane-1-ol and Propane-2-ol with this test ?



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2. Arrange the following compounds in the increasing order of their boiling points :

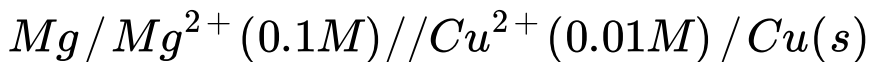


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3. Why Phenols are more acidic than Alcohol ?

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4. Write the Nernst equation and calculate E.M.F of the following reaction at 298 K



given  $E_{\text{cell}}^0 = 2.71V$ ,  $F = 96500C / mol$

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5. Draw the structure of  $XeF_2$ ,  $XeF_4$  and  $XeF_6$ .

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6. Arrange the different oxoacids of chlorine in increasing order of acidic strength?

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7. A first order reaction takes 30 minutes for 50 % completion. Calculate the time required for 90 % completion of the reaction.

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8. A reaction is of first order in reactant A and of second order in reactant B. How is rate of reaction affected when

(a) Concentration of B alone is increased to three times.

(b) The concentration of A as well as B is doubled.



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9. A reaction is first order in A and second order in B. How is the rate affected when the

concentrations of both A and B are doubled?



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## Section D Long Answer Questions Type II

1. Why Zr and Hf exhibit similar properties ?



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



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3. Why transition metals are generally coloured ?

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4. Why is Copper considered as transition metal ?

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5. Chemistry of all lanthanoids is so identical.  
Explain.

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6. Explain :Transition elements exhibit variable oxidation states.



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7. Write Wurtz reaction.



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8. Write the following reactions:

Finkelstein reaction



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**9.** Give the following reactions:

Fitting reaction



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**10.** Explain the following reactions :

Ulmann reaction



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**11.** Write the following reactions

Sandmeyer reaction



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**12.** Write the following reactions :

Gattermann reaction



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**13.** Aryl halide are less reactive than alkyl halides towards nucleophilic substitution reactions. Why ?

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14. How will you differentiate between  $S_{N1}$  and  $S_{N2}$  reaction mechanism ?

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