



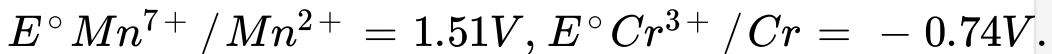
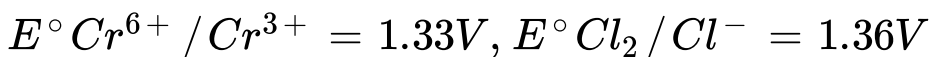
## CHEMISTRY

### BOOKS - ACCURATE PUBLICATION

### SOLVED MODEL TEST PAPER-3

#### Section A Multiple Choice Questions

1. Using the given data ,find the strongest reducing agent



A.  $Cl^-$

B. Cr

C.  $Cr^{+3}$

D.  $Mn^{2+}$

**Answer: B**



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2. A reaction  $2NH_3 \rightarrow N_2 + 3H_2$  Product, what is order of Reaction.

A. 2

B. zero

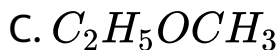
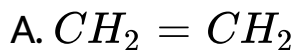
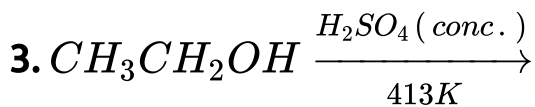
C.  $3/2$

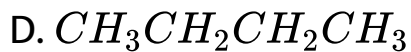
D. 1

**Answer: B**



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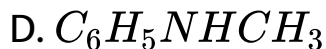
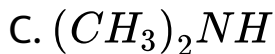
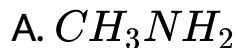


**Answer: B**



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4. The strongest base is :



**Answer: C**



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5. 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: B**



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6. Constant boiling mixtures are called

- A. ideal solution
- B. Azeotropes
- C. isotonic solution
- D. None of these.

**Answer: B**

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7. 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.

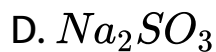
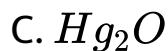
**Answer: C**



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**8. Fool's gold is known as**

A. ZnS



**Answer: B**



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9. The property which is not characteristic of transition metals is

A. variable oxidation states.

B. tendency to form complexes.



C. formation of coloured compounds

D. natural radioactivity

**Answer: D**



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**10.** Write the IUPAC name of  $[Pt(NH_3)_4Cl_2]Cl_2$ .

A. tetraamedichloridoplatinum (IV) chloride

B. tetraamedichloridoplatinate(VI)chloride

C. dichloridotetraamineplatinum(IV)chloride

D. dichloridotetraamineplatinum(VI)chloride

**Answer: A**

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**11.** In tetrahedral complex five d-orbitals split up into

- A.  $d_{xy}$ ,  $d_{yz}$ ,  $d_{zx}$  higher energy
- B.  $d_{xy}$ ,  $d_{yz}$ ,  $d_{zx}$  of lower energy
- C.  $d_{x^2 - y^2}$  and  $d_{z^2}$  of higher energy
- D. None of the above

**Answer: A**

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12. Which one of the following on oxidation gives acetone ?

A. Primary alcohol

B. Secondary alcohol

C. Tertiary alcohol

D. All of these

**Answer: D**



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**13.** What is formed when primary alcohol undergoes catalytic dehydrogenation ?

A. Aldehyde

B. Ketone

C. Alkene

D. Acid

**Answer: A**



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**14.** The catalyst used in Rosenmund's reduction is

A.  $HgSO_4$

B.  $Pd / BaSO_4$

C. Anhydrous  $AlCl_3$

D.  $Ni / Pt, H_2$

**Answer: B**



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15. The oxidation of toluene to benzaldehyde by chromyl chloride is called

A. Rosenmund reaction

B. Wurtz reaction

C. Etard reaction

D. Fitting reaction

**Answer: B**

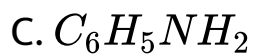


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**16.** Which of the following compounds cannot be identified by carbylamine test ?

A.  $CH_3CH_2NH_2$

B.  $CHCl_3$



**Answer: D**



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**17. Amino acids are the building blocks of**

A. carbohydrates

B. vitamins

C. fats

D. proteins

**Answer: D**



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**18. What is the monomer of a polypeptide ?**

A. Amino acid

B. Glucose

C. Nucleoside

D. Nucleotide

**Answer: A**



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## Section A Passage Based Question

1. Read the given passage and answers following question:

Factors that influence the adsorption of a gas on a solid

1. Nature and surface area of adsorbent : Greater the surface area of the adsorbent, greater is the volume of gas adsorbed. Due to this reason, substances like charcoal and silica gel are best adsorbents because they have high surface area and highly porous structure.

2. Temperature : It is observed that the adsorption

decreases with the increase of temperature.

For example, one gram of charcoal adsorbs about 10 ml of  $N_2$  at 273 K, 20 ml at 244 K and 45 ml at 195 K.

3. Pressure : At constant temperature, the adsorption of gas increases with the increase of pressure.

At low temperature, the adsorption of gas increases very rapidly as the pressure is increased.

4. Activation of the solid adsorbent.

Answer the following question :

What is adsorption ?



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2. Read the given passage and answers following question:

Factors that influence the adsorption of a gas on a solid

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4. Activation of the solid adsorbent.

Answer the following question :

How does surface area of adsorbent affects the adsorption of gases ?



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3. Read the given passage and answers following question:

Factors that influence the adsorption of a gas on a

solid

1. Nature and surface area of adsorbent : Greater the surface area of the adsorbent, greater is the volume of gas adsorbed. Due to this reason, substances like charcoal and silica gel are best adsorbents because they have high surface area and highly porous structure.

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4. Activation of the solid adsorbent.

Answer the following question :

Give the example of best adsorbents ?



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4. Read the given passage and answers following question:

Factors that influence the adsorption of a gas on a solid

1. Nature and surface area of adsorbent : Greater the surface area of the adsorbent, greater is the volume of gas adsorbed. Due to this reason, substances like

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4. Activation of the solid adsorbent.

Answer the following question :

How does temperature of adsorbent affects the adsorption of gases ?



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5. Read the given passage and answers following question:

Factors that influence the adsorption of a gas on a solid

1. Nature and surface area of adsorbent : Greater the surface area of the adsorbent, greater is the volume of gas adsorbed. Due to this reason, substances like charcoal and silica gel are best adsorbents because they have high surface area and highly porous



structure.

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Answer the following question :

Give the example of best adsorbents ?



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## Section A True False Type Questions

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



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2. Azo dye test can be used to distinguish aromatic primary amines from aliphatic primary.



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3. 2,4 dinitrophenol is less acidic than phenol.

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

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5. Keratin, fibrin and collagen are fibrous proteins.

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1. Why is Copper considered as transition metal ?



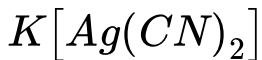
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2. Define Ambident ligands ?



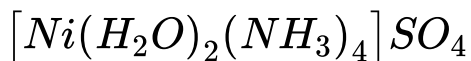
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3. Write the IUPAC name of following :



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4. Write the IUPAC name of the following:



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5. How will you show that elevation in boiling point is a colligative property?



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6. What are the units of rate constant for a third order reaction ?



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7. Why are Lanthanides called inner transition metals.



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8. Oxygen gas is inert at room temperature why?



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9. Halogens have maximum negative electron gain enthalpy in the respective periods of the periodic table. Why ?



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10. Write two uses of Chlorine.

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

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12. The decomposition of  $NH_3$  on platinum surface is zero order reaction. If rate constant is  $4 \times 10^{-3} m/s$ , how long will it take to reduce the initial concentration of  $NH_3$  from 0.1 M to 0.064 M.



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**13.** A first order reaction has a specific reaction rate is  $10^{-2} \text{ sec}^{-1}$ . How much time will it take for 10 g of its reactant to be reduced to 2.5 g.



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



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**15.** In winter, the normal temperature in Dharmshala is  $-8^{\circ}\text{C}$  is a 30% by mass of an aqueous solution of ethylene glycol (molar mass = 62) suitable for car radiator.  $K_f$  for water is  $1.86\text{ K/m}$

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**16.** What is the difference between e.m.f. and potential difference?

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## Section C

1. Discuss the reaction and mechanism of acidic dehydration of ethyl alcohol to prepare ether.

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2. Phenol are more acidic in nature than alcohol  
Explain why?

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3. C-O-C bond angle in ethers is higher than H-O-H bond angle in water through O is  $sp^3$  -hybridised in both the cases.

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

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5. Calculate the maximum work that can be obtained from the Daniell cells:  $Zn|Zn^{2+}(aq)||Cu^{2+}(aq)|Cu$

Given

$$E^{\circ}((\text{Zn}^{2+}|\text{Zn})) = -0.76\text{V}$$

and

$$E^{\circ}((\text{Cu}^{2+}|\text{Cu})) = 0.34\text{V}$$



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6. The reaction  $2\text{NO}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2$  forms  $\text{NO}_2$

at the rate of  $0.0072 \text{ mol L}^{-1} \text{ s}^{-1}$  after a certain time.

What is the rate of change of  $[\text{O}_2]$  at this time?



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7. The reaction  $2\text{N}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2$  forms  $\text{NO}_2$  at

the rate of  $0.0072 \text{ mol L}^{-1} \text{ s}^{-1}$  after a certain time.

What is the rate of change of  $[\text{N}_2\text{O}_5]$  at this time ?



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8. The reaction  $2NO_2O_5 \rightarrow 4NO_2 + O_2$  forms  $NO_2$  at the rate of  $0.0072 \text{ mol L}^{-1} \text{ s}^{-1}$  after a certain time. What is the rate of change of  $[O_2]$  at this time?



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9. A first order reaction is 20 % complete in 10 minutes. Calculate  
Specific rate constant of the reaction



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**10.** 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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**11.** Why are halogens coloured ?



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**Section D**

1. Explain the following reactions:

Balz Schiemann reaction.

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2. Explain the following reaction :

Sulphonation of Haloarenes

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3. Explain the following reaction : Sandmeyer's reaction

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4. Explain the following reaction : Finckelstein reaction

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5. Write the following reaction:

Wurtz Fittig Reaction

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6. Why aryl halide(haloarenes) are less reactive than alkyl halide(haloalkanes)?





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7. What are ambident nucleophiles? Explain with an example ?



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



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9. Explain why Cu(I) is diamagnetic while Cu(II) is paramagnetic in nature?

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

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11. Define Lanthanide Contraction.

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**12.** What are the main consequences of lanthanoid contraction ?



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