



# CHEMISTRY

## BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

### MODEL QUESTION PAPER -1

#### Part I

1. The metal oxide which cannot be reduced to metal by carbon is

A. PbO

B.  $Al_2O_3$

C. ZnO

D. FeO

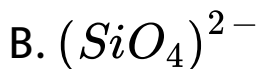
**Answer: B**



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2. The basic structural unit of silicates is

A.  $(SiO_3)^{2-}$



**Answer: D**



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**3. In which of the following,  $NH_3$  is not used ?**

A. Nessler's reagent

B. Reagent for the analysis of IV group

basic radical

C. Reagent for the analysis of III group

basic radical

D. Tollen's reagent

**Answer: A**



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4. Which of the following statements is not true ?

A. on passing  $H_2S$  through acidified ,  
 $K_2Cr_2O_7$  solution , a milky colour is  
observed.

B.  $Na_2Cr_2O_7$  is preferred over  $K_2Cr_2O_7$   
in volumetric analysis

C.  $K_2Cr_2O_7$  solution acidic medium is  
orange in colour

D.  $K_2Cr_2O_7$  solution becomes yellow on increasing the  $P^H$  beyond 7

**Answer: B**



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5. Which kind of isomerism is possible for a complex  $[Co(NH_3)_4Br_2]Cl$ ?

A. geometrical and ionization

B. geometrical and optical

C. optical and ionization

D. geometrical only

**Answer: A**



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6. In calcium fluoride, having the fluorite structure the coordination number of  $Ca^{2+}$  ion and  $F^{-}$  ion are

A. 4 and 2

B. 6 and 6

C. 8 and 4

D. 4 and 8

**Answer: C**



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7. what is the activation energy for a reaction if its rate doubles when the temperature is raised from 200 K to 400 K ?



A.  $234.64 \text{ kJ mol}^{-1} \text{ K}^{-1}$

B.  $434.65 \text{ kJ mol}^{-1} \text{ K}^{-1}$

C.  $434.65 \text{ J mol}^{-1} \text{ K}^{-1}$

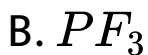
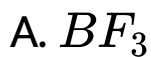
D.  $334.65 \text{ J mol}^{-1} \text{ K}^{-1}$

**Answer: C**



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**8.** Which of the following fluoro- compounds is most likely to behave as a Lewis base ?

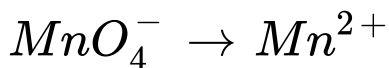


**Answer: B**



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9. How many faradays of electricity are required for the following reaction to occur



A. 5F

B. 3F

C. 1F

D. 7F

**Answer: A**



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**10.** Which one of the following is correctly matched ?

A. Emlulsion - smoke

B. Gel - butter

C. Foam - Mist

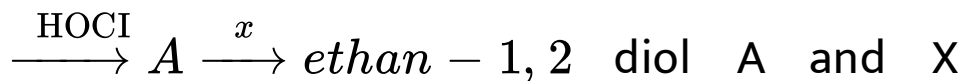
D. Sol - Whipped cream

**Answer: B**



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**11.** In the reaction sequence, Ethana



respectively are

A. Chloroethane and NaOH

B. ethanol I and  $H_2SO_4$

C. 2 - chloroethan -1-ol and  $NaHCO_3$

D. ethanol and  $H_2O$

**Answer: C**



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**12. Assertion :** 2 ,2 - dimethyl propanoic acid does not give HVZ reaction .

Reason : 2 -2 , dimethyl propanoic acid does not have - - hydrogen atom

A. if both assertion and reason are true and reason is the correct explanation of assertion .

B. if both assertion and reason are true but reason is not the correct explanation of assertion .

C. assertion is true but reason is false

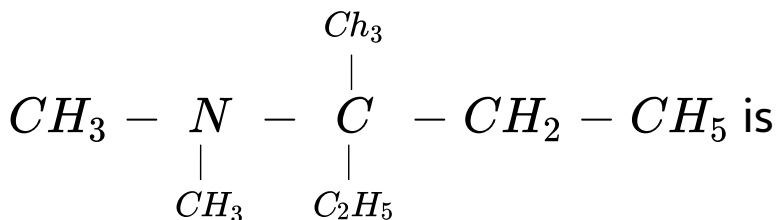
D. both assertion and reason are false .

**Answer: A**



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**13. IUPAC name for the amine**



- A. 3- Bimethylamino -3- methyl pentane
- B. 3(N, N - Triethyl) -3- amino pentane
- C. 3- N, N - trimethyl pentanamine

D. 3- ( N, N - Dimethyl amino ) -3- methyl  
pentane

**Answer: D**



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**14.** Vitamin  $B_2$  is also known as

A. Riboflavin

B. Thiamine

C. Nicotinamide



D. pyridoxine

**Answer: A**



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**15.** Nylon is an example of

A. polyamide

B. polythene

C. polyester

D. poly saccharide

**Answer: A**



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## Part II

1. Give the limitations of Ellingham diagram.



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2. Write a short note on hydroboration.





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3. Which metal in the 3d series exhibits +1 oxidation state most frequently and why?



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4. Explain the effect of catalyst on reaction rate with an example.



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5. What is Henderson equation ?



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6. Give three uses of emulsions.



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7. Draw the major product formed when 1-ethoxyprop-1-ene is heated with one equivalent of HI



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8. Write short notes on Hofmann's bromide reaction .



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9. Write the structural formula of aspirin.



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1. Describe a method for refining nickel.



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2. Give the uses of sulphuric acid.



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3. What are the limitations of VB theory?



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4. If NaCl is doped with  $10^{-2}$  mol percentage of strontium chloride , what is the concentration of cation vacancy ?



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5. What are enzymes? Write a brief note on the mechanism of enzyme catalysis.



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6. What are Lewis acids and bases? Give two example for each.



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7. What are hormones ? Give examples ?



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8. What are drugs ? How are they classified .



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9. 0.1M copper sulphate solution in which copper electrode is dipped at  $25^{\circ}C$ . Calculate the electrode potential of copper.

[Given:  $E^{\circ}_{Cu^{2+}|Cu} = 0.34$ ]



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Part Iv

1. Explain the electrometallurgy of aluminium.



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2. How will you prepare chlorine in the laboratory ?



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3. Compare Lantanides and actinides.



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4. Discuss briefly the nature of bonding in metal carbonyls.



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5. Discuss briefly the nature of bonding in metal carbonyls.



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6. For the reaction  $2x + y \rightarrow L$ . Find the rate law from following data.



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7. Explain common ion effect with an example.



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**8.** Describe some feature of catalysis by Zeolites .



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**9.** Explain the mechanism of cleansing action of soaps and detergents.



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10. A Compound (A) with molecular formula  $C_2H_3N$  on acid hydrolysis gives (B) which reacts with thionylchloride to give compound (C). Benzene reacts with compound (C) in presence of anhydrous  $AlCl_3$  to give compound (D). Compound (D) on reduction gives (E). Identify (A), (B), (C), (D) and (E). Write the equations.



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