# CHEMISTRY

# BOOKS - GURUKUL BOOKS & PACKAGING CHEMISTRY (HINGLISH)

# OCTOBER 2014

## Section I

**1.** Arrhenius equation is

A. $K = Ae^{\frac{RT}{E_a}}$

B. $A = Ke^{\frac{E_a}{RT}}$

C. $K = Ae^{\frac{-RT}{E_a}}$

D. $A = Ke^{\frac{-E_a}{RT}}$

**Answer: A**

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**2.** If the enthalpy of vaporisation of water is

$186.5 Jmol^{-1}$, then entropy of its vaporisation

will be

A. $4.0JK^{-1}mol^{-1}$

B. $3.0JK^{-1}mol^{-1}$

C. $1.5JK^{-1}mol^{-1}$

D. $0.5JK^{-1}mol^{-1}$

**Answer: A**

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**3.** Atomicity of sulphur in rhombic sulphur is

A. 8

B. 6

C. 4

D. 2

**Answer:**

**4.** The major binding force of diamond, silicon and quartz is

A. Covalent bond

B. Ionic bond

C. Metallic bond

D. Co- ordinate covalent bond

**Answer: Covalent bond**

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**5.** Water boils at a lower tempature at high altitudes, because

A. The temperature is low

B. The atmospheric pressure is low

C. The temperature is high

D. The atmospheric pressure is high

Answer: The atmospheric pressure is low

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6. The molar conductivity of caption and anion of salt BA are 180 and 220 ohm^(-1) cm^(2) mol^(-1) respectively . The molar conductivity of salt BA at infinite dilution is -

A. 90 ohm^(-1) cm^(2) mol^(-1)

B. `110 ohm^(-1) cm^(2) mol^(-1)

C. 200 ohm^(-1) cm^(2) mol^(-1)`

D. 400 ohm^(-1) cm^(2) mol^(-1)

**Answer: 400 ohm^(-1) cm^(2) mol^(-1)**

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**7.** What is the process in which concentrated

ore is reduced to the corresponding metal by

heating at high temperature with reducing agent ?

A. Polling

B. Pyrometallurgy

C. Hydrometallurgy

D. Calcination

Answer: Pyrometallurgy

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**8.** Describe anomalous behaviour of oxygen as compared with other elements of group 16 with reference to :
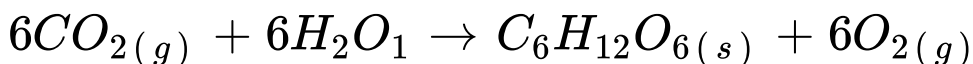
(a) Magnetic property (b) Oxidation state

(c ) Hydrides

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**9.** What is the value of $\Delta S_{surr}$ for the following reaction at 298 K-

$$6CO_{2(g)} + 6H_2O_1 \rightarrow C_6H_{12}O_{6(s)} + 6O_{2(g)}$$

Given tahat : $\Delta G^\circ = 2879 kj\text{mol}^{-1}$

$\Delta S = -210 JK^{-1}\text{mol}^{-1}$

10. Sucrose decomposes in acid solution into glucose and fructose according to the first order rate law, with $t_{1/2} = 3.00 hr.$ What fraction of sample of sucrose remains after $8hr$ ?

**11.** A solution containing 0.73 g of camphor ( molar mass 152 g $\text{mol}^{-1}$ ) in 36.8 g of acetone ( boiling point $56.3°C$) boils at $56 \cdot 55°C$ . A solution of 0.564 g of unknown compound in the same weight of acetone boils at $56.46°C$ . Calculate the molar mass of the unknown compound .

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**12.** Describe triclinic crystal lattice with tha help of a diagram.

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**13.** ELECTROCHEMICAL SERIES

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**14.** Hess's law of constant heat summation is bases on

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**15.** Distinguish between order and molecularity of a reaction.

**16.** With the help of the equation $\Delta G^{\circ} = -nFE^{\circ}$ cell explain that cell potential is an intensive property .

**17.** Describe the laboratory method of preperation of ammonia .

**18.** Define van't Hoff factor . How is it related to the degree of dissociation ?

**19.** Write chemical formulae of the following ores:

(a ) Calamine (b ) Haematite

(c ) Magnetite (d) Corundum

**20.** Write the reactions involved in extraction of silver from its ore by leaching process.

Derive the equation : $W = -P_{\text{ext} \cdot} \Delta V$

A unit cell of iron crystal has edge length 288

pm and density $7 \cdot 86 \text{gcm}^{-3}$ .Find the number of atoms per unit cell and type of the crystal lattice .

Given : Molar ,mass of iron = 56 g $\text{mol}^{-1}$

avogadro's number $N_A = 6 \cdot 022 \times 10^{23}$

21. Define : Cryoscopic constant

What is the action of hot/concentrated nitric acid on :

(a) Arsenic

(b) Antimony

Draw the structure of :

(a) Orthophosphoric acid

(b) Pyrophosphoric acid

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22. How much electricity in terms of Faraday is required to produce.

a. $20.0g$ fo $Ca$ from molten $CaCl_2$

b. $40g$ of $Al$ from molten $Al_2O_3$

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1. Which of the following is a trihydric alcohol ?

    A. n- propyt alcohol

    B. Glycerol

    C. Glycol

    D. Glycine

**Answer: C**

**2.** Alkyl halides are :

A. Monohalogen derivatives of alkanes

B. Dihalogen derivatives of alkanes

C. Trihalogen derivatives of alkanes

D. Tetrahlogen derivatives of alkanes

**Answer: A::D**

**3.** Mohr's salt is :

A. Ferrous ammonium sulphate

B. Ferrous sul,phate

C. Ammonium sulphate

D. Ferric sulphate

**Answer: A**

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**4.** Which of the following is polymide ?

A. Teflon

B. Nylon 6,6

C. Terylene

D. Bakelite

**Answer:**

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**5.** Vitamin 'C' belongs to the class of -

A. Vitamins of aliphatic series

B. Vitamins of alicyclic series
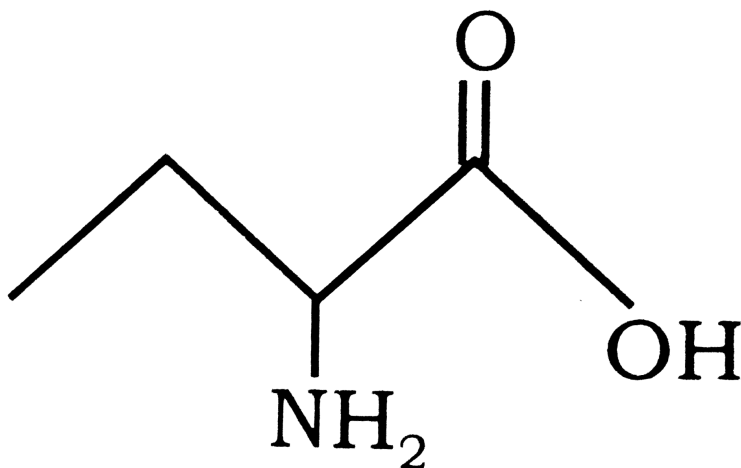
C. Vitamins of armoatic series

D. vitamins of hetyrocyclic series

**Answer: A::C**

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**6.** What is the IUPAC name of



A. a- Amino butyric acid
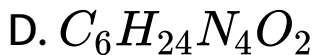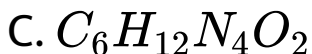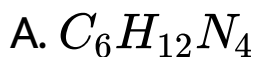
B. 2- Amino butric acid

C. a-Amino butyric acid

D. 2- Amino butanoic acid

**Answer: A::B::C::D**

7. Which among the following molecular formulae represents urotropine ?

A. $C_6H_{12}N_4$

B. $C_6H_{24}N$

C. $C_6H_{12}N_4O_2$

D. $C_6H_{24}N_4O_2$

**Answer: A::B::C::D**

**8.** Write the structure of :

(a) 3 - chloro -3 - ethylhex - 1 - ene

(b ) 1- Iodo -2 3 - dimethylbutane

(c ) 1 , 3,5 - tribromobenzene

**9.** What is the action of acidified potassium dichromate on :

(a ) $SO_2$

(b ) KI

Draw structure of dichromate ion .

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**10.** Describe laboratory method for preparation of glucose . Write the reaction

that indicates the presence of - CHO group in glucose .

11. What will be the action of the mixture of sodium nitrite and dilute hydrochloric acid on :

(a ) Ethyl amine

(b ) Aniline

(c ) Triethyl amine

**12.** What are the chemical twins ? Write 'two ' examples

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**13.** Explain the terms :

(a) Antiseptics (b) Analgesics

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**14.** Draw the simple Fisher projection formulae of $D - ( + ) -$ glucose and $D - ( - ) -$ fructose .

**15.** Classify the following ligands into monodentate and polydentate :

(a) Ammonia

(b ) Carbon monoxide

(c ) Ethylene diamine

(d ) Ethylene diamine tetra O acetate ion

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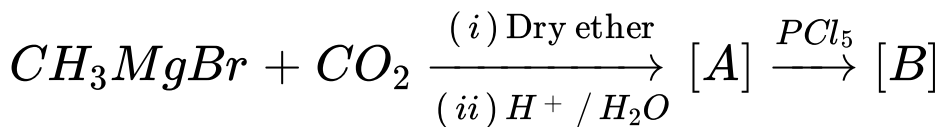**16.** State and explain Markonikoff's rule with suitable example .

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**17.** How are propan -l- amine and propan -2 - amine prepared from oxime ?

**18.** Give the formulae of [A] and [B]

$$CH_3MgBr + CO_2 \xrightarrow[(ii)\, H^+\,/\,H_2O]{(i)\, \text{Dry ether}} [A] \xrightarrow{PCl_5} [B]$$
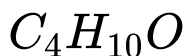
**19.** What is the action of the following reagents on phenol ?

(a) Bromine in $CS_2$ at low temperature

(b) Conc . $H_2SO_4$ at room temperature .

**20.** Write the sructure and IUPAC names of all the metamers represented by formula $C_4H_{10}O$

Write balanced chemical equations for action of ammonia on :

(a) Formaldehyde (b) Acetaldehyde

(c ) Acetone

**21.** Acetaldehyde is :

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**22.** Acetone is prepared by

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**23.** Write four characteristics of co - ordinate complex ions.

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**24.** Nylon-6,6 is a

**25.** Write any two uses of terylene.

**26.** Explain physical methods for preservation of food.

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Section 8 I

**1.** what happens when Formaldehyde reacts with ammonia

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