



CHEMISTRY

BOOKS - GURUKUL BOOKS & PACKAGING CHEMISTRY (HINGLISH)

MARCH 2017

Secton I

1. An antifriction alloy made up of antimony with tin and copper, which is extensively used

in machine bearings is called :

- A. Duralumin
- B. Babbitt metal
- C. Spiegeleisen
- D. Amalgams

Answer: B



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2. Which of the following pairs is an intensive property ?

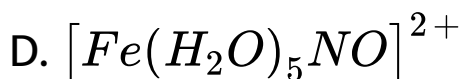
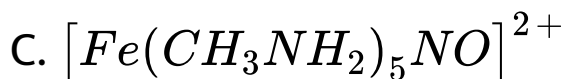
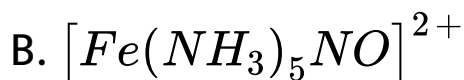
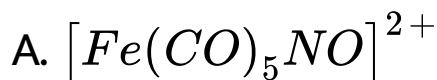
- A. Density, viscosity
- B. Surface tension, mass
- C. Viscosity, internal energy
- D. Heat capacity, volume

Answer: A



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3. Fe^{2+} ions react with nitric oxide formed from reduction of nitrate and yields a brown coloured complex:



Answer: D



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4. MnO_2 and $Ca_3(PO_4)_2$ present in iron are get reduced to Mn and P in the zone of :

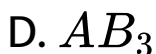
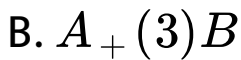
- A. Combustion`
- B. Reduction
- C. Fusion
- D. Slag formation

Answer: B



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5. An ionic compound crystallise in FCC type structure with 'A' ions at the centre of each face and 'B' ions occupying corners of the cube. The formula of compound is :



Answer: B



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6. On passing 1.5 F charge the number of moles of aluminium deposited at cathode are

[Molar mass of $Al = 27 \text{ g ram } mol^{-1}$]

A. 1.0

B. 13.5

C. 0.50

D. 0.75

Answer: C

7. For a chemical reaction, $A \rightarrow$ products, the rate of reaction doubles when the concentration of 'A' is increased by a factor of 4, the order of reaction is :

- A. 2
- B. 0.5
- C. 4
- D. 1

Answer: B



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8. FUEL CELLS



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9. Derive the relationship between half life and rate constant for first order reaction.



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10. Explain magnetic separation process of ores with the help of a neat , labelled diagram.



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11. Derive the relationship between relative lowering of vapour pressure and molar mass of solute.



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12. Define the term 'enthalpy'.

What will happen to the internal energy if work is done by the system ?



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13. (a) Though nitrogen exhibits +5 oxidation state, it does not form pentahalide. Give reason.

(b) PH_3 has lower boiling point than NH_3 .

Why ?



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14. Calculate the percentage of packing efficiency in simple cubic unit cell.



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15. Write the electronic configuration of the following elements :

(a) Sulphur ($Z = 16$)

(b) Krypton ($Z = 36$)



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16. How is phosphine prepared using the following reagents ?

(a) HCl

(b) H_2SO_4

(c) Caustic soda



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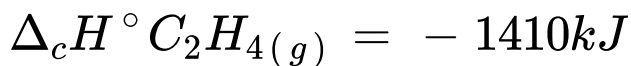
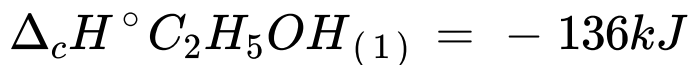
17. 0.05 M NaOH solution offered a resistance of $3.1 \cdot 6\Omega$ in a conductivity cell at 298 K. If the

cell constant of the cell is 0.367cm^{-1} ,
calculate the molar conductivity of NaOH
solution.



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18. Calculate ΔH° for the reaction between
ethene and water to form ethyl alcohol from
the following data:



Does the calculated ΔH° represent the enthalpy of formation of liquid ethanol ?



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19. In the Arrhenius equation for a centrain, the value of A and E_a (activation energy) are $4 \times 10^{13} s^{-1}$ and 98.6 kJ mol^{51} respectively. If the reaction is of first order, at what temperature will its half-life preriod be 10 min ?



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20. State faraday's first law of electrolysis.

Uses of: (a) H_2SO_4 (b) Chlorine

Disitinguish between crystalline solids and amorphus solids.

A solution of a substance having mass $1.8 \times 10^{-3} kg$ has the osmotic pressure of 0.52 atm at 280 K . Calculate the molar mass of the substance used.

[Volume

$$= 1 dm^3, , R = 8.314 JK^{-1} mol^{-1}]$$



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21. Define the following:

(a) Leaching

(b) Metallurgy

(c) Anisotropy

The boiling point of benzene is 353.23K .

When 1.80 gram of non-volatile solute was dissolved in 90 gram of benzene, the boiling point is raised to 354.11K . Calculate the molar mass of solute.

$[K_b \text{ for benzene} = 2.53\text{Kmol}^{-1}]$



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Section li

1. When primary amine reacts with $CHCl_3$ in alcoholic KOH , the product is :

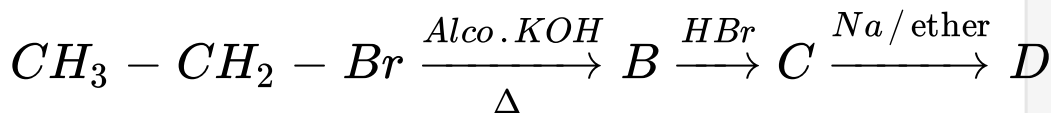
- A. Aldehyde
- B. Alcohol
- C. Cyanide
- D. An-isocyanide

Answer: D



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2.



the compound D is :

A. Ethane

B. Propane

C. n-Butane

D. n-Pentane

Answer: C



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3. Cisplatin compound is used in the treatment of :

A. Malaria

B. Cancer

C. AIDs

D. Yellow fever

Answer: B



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4. A gas when passed through $K_2Cr_2O_7$ and dil. H_2SO_4 solution turns it green, the gas is :

A. CO_2

B. NH_3

C. SO_2

D. Cl_2

Answer: C



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5. The alcohol used in thermometer is :

A. Methanol

B. Ethanol

C. Butanol

D. None of the above

Answer: B



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6. Which of the following vitamins is the vitamin of alicyclic series ?

A. Vitamin C

B. Vitamin K

C. Vitamin B

D. Vitamin A

Answer: D



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7. Which of the following is the first oxidation product of secondary alcohol ?

A. Alkene

B. Aldehyde

C. Ketone

D. Carboxylic acid

Answer: C



8. How is diethyl ether prepared by continuous etherification process ?



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**9. HOFFMANN BROMAMIDE DEGRADATION
REACTION**



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10. How is ethanoic acid prepared from dry ice ?



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11. Write the molecular and structural formula of BHA and BHT.



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12. Explain glucose. What is the role of glucose (cane sugar) from Sucrose.



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13. The colour of the transition metal ions is due to



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14. Explain the following terms :

(a) Homopolymers

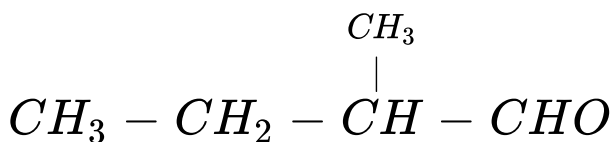
(b) Elastomers



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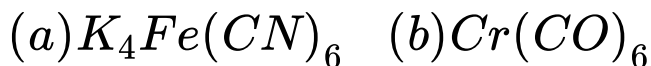
15. Define racemic mixture.

Give IUPAC name of



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16. Calculate the effective atomic number of the central metal atom in the following compounds :



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17. Write the different oxidation states of iron.

Why +2 oxidation state of manganese is more stable ?

(Z of Mn = 25).



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18. Write a note a 'aldol condensation'



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19. What are nucleic acids'?

Define complex lipids. Mention any 'two' functions of lipids.



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20. What is the action of mixture of $NaNO_2$

and dil. HCl on :

(a) Ethylamine,

(b) Aniline

(c) Diethylamine

How is nylon 6,6 prepared ?

What are antacids'?

Write any 'two' side effects of tranquilizers.



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21. Explain the mechanism of alkaline hydrolysis of tertbutyl bromide with energy profile diagram. Define carbolic acid and its preparation from benzene sulphonic acid?



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