CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

SAMPLE PAPER - 6 (SOLVED)

Part I

1. In the extraction of aluminium from alumina by electrolysis, cryolite is added to

A. Lower the melting point of alumina

B. Remove impurities from alumina

C. Decrease the electrical conductivity

D. Increase the rate of reduction

Answer:

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2. Compound used for propellant i s .....

A. BN

B. $H_2B_4O_7$

C. B_2H_6

D. Borax

Answer:

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3. P_4O_6 reacts with cold water to give

A. H_3PO_3

B. $H_4P_2O_7$

C. HPO_3

D. H_3PO_4

Answer:

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4. After 2 hours, a radioactive substance becomes $\left(\frac{1}{16}\right)^{th}$ of original amount. Then the half life (in min) is

A. 60 minutes

B. 120 minutes

C. 30 minutes

D. 15 minutes

Answer:

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5. What is the decreasing order of strength of bases?

$OH^-, NH_2^-, H-C\equiv C$ and CH_3-H_2

A. $OH^- > NH_2^- > H-C\equiv C^- > CH_3-CH_2^-$

B.

$NH_2^- > OH^- > CH_3-CH_3-CH_2^- > H-C\equiv C^-$

C. $CH_3 - CH_2^- > NH_2^- > H - C \equiv C^- > OH^-$

D. $OH^- > H - C \equiv C^- > CH_3 - CH_2^- > NH_2^-$

Answer:

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6. Which electrolyte is used in Leclanche cell?

A. $ZnSO_4 + CuSO_4$

B. $NH_4Cl + ZnCl_2$

C. $NaCl + CuSO_4$

D. $MnSO_4 + MnO_2$

Answer:

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7. The phenomenon observed when a beam of light is passed through a colloidal solution is

A. Cataphoresi

B. Electrophoresis

C. Coagulation

D. Tyndall effect

Answer:

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8. In the following sequence of reactions,

$$CH_3 - CH_2OH \xrightarrow{P+I_2} A \xrightarrow{Mg/\text{ether}} B \xrightarrow{HCHO} C \xrightarrow{H_2O} D.$$

the compound D is .....

A. Butanol

B. n-butyl alcohol

C. propan-1-ol

D. Propanal

Answer:

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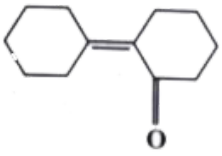
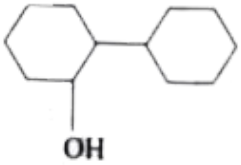
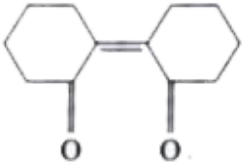
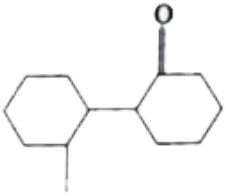
9. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?

A. 

B. 

C. 

D. 

Answer:

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10. Insulin, a hormone chemically is

A. fat

B. steriod

C. Protein

D. carbohydrates

Answer:

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11. The role of phosphate in detergent powder i s .....

A. control pH level of the detergent water mixture

B. remove Ca^{2+} and Mg^{2+} ions from water that causes hardness of water

C. provide whiteness to the fabric

D. more soluble in soft water

Answer:

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Part Ii

1. Write down the steps involved in a metallurgical process.

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2. Give the uses of Borax.

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3. Differentiate Primary and Secondary cells.

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4. Write a note about molecular solids.

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5. What are the limitations of Arrhenius concept?

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6. Write a note on catalytic poison

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7. Convert phenyl magnesium bromide to phenyl methanol (or) How would you prepare phenyl methanol from Grignard reagent?

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8. Identify compounds A,B and C in the following sequence of reactions.

$$CH_3CH_2NC \xrightarrow{HgO} A \xrightarrow{H_2O} B \xrightarrow[(ii)\,H_4O]{(i)\,NaNO_2/HCl} C$$

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9. Why vitamin C cannot be stored· in our body?

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Part Iii

1. All ores are minerals , but all minerals cannot be called as ores ,

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2. Explain the commercial method of preparation of nitric acid. (or) How nitric acid is prepared by Ostwald's process.

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3. Actinoid contraction is greater from element to element than the lanthanoid contraction, why?

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4. Give examples for first order reaction.

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5. Complete the following reaction.

$$CH_3 - CH_2 - CH_2 - \underset{\underset{O}{||}}{C} - CH_3 \xrightarrow[H^+]{HO - CH_2 - CH_2 - CH_2 - OH} ?$$

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6. How will you calculate degree of dissociation of weak electrolytes and dissociation constant using Kohlrausch's law?

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7. What are the characteristics of adsorption?

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8. Give the uses of cellulose.

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9. How will you prepare PHBV? Give its use?

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Part Iv

1. (a) (i) Which types of ores can be concentrated by froth floatation method? Give two examples for such ores.

(ii) Explain the variation in $E^{\circ}_{M^{3+}/M^{2+}}$ 3d series.

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2. (b) (i) Mention the uses of silicon tetrachloride.

(ii) What are all the conditions that are necessary for catenation?

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3. (a) (i) Discuss the manufactures of chlorine.

(ii) What is inert pair effect?

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4. (b) (i) Calculate the magnetic moment of Ti^{3+} and V^{4+}

(ii) Draw all possible isomers of the complex $\left[Co(en)_2Cl_2\right]^+$ and identify the optically active isomer.

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5. (a) (i) Calculate the number of atoms in a fcc unit cell.

(ii) How do nature of the reactant influence rate of reaction?

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6. (b) (i) Account for the acidic nature of $HClO_4$

In terms of Bronsted - Lowry theory, identify its conjugate base.

(ii) Is it possible to store copper sulphate in an iron vessel for a long time?

Given: $E^{\circ}_{Cu^{2+}/Cu} = 0.34V$ and $E^{\circ}_{Fe^{2+}/Fe} = +0.44V$

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7. (a) (i) Explain the formation of water with copper catalyst by intermediate compound formation theory.

(ii) O-nitro phenol is slightly soluble in water where as P-nitro phenol is more soluble, Give reason.

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8. (b) (i) What happens when the following alkenes are subjected to reductive ozonolysis.

1. Propene, 2. Butene, 3. Isobutylene.

(ii) What are reducing and non - reducing sugars?

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9. A Dibromo derivative (A) on treatment with KCN followed by acid hydrolysis and heating gives a monobasic acid (B) along with liberation of CO_2. (B) on heating with liquid ammonia followed by treating with Br_2/KOH gives (C) which on treating with $NaNO_3$ and HCl at low temprerature followed by oxidation gives a monobasic acid (D) having molecular mass 74. Identify A to D.

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10. Explain the mechanism of cleansing action of soaps and detergents.

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