# CHEMISTRY

# BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

# SAMPLE PAPER 10 (SOLVED)

## Part I

**1.** Match items in column - I with the items of column - II and assign the correct code:

| Column-I | Column-II |
|---|---|
| A Cyanide process | (*i*) Ultrapure Ge |
| B Froth floatation process | (*ii*) Dressing of ZnS |
| C Electrolytic reduction | (*iii*) Extraction of Al |
| D Zone refining | (*iv*) Extraction of Au |

A. $\begin{matrix} A & B & C & D \\ (\mathrm{i}) & (ii) & (iii) & (\mathrm{iv}) \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ (\mathrm{iii}) & (iv) & (v) & (i) \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ (\mathrm{iv}) & (ii) & (iii) & (v) \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ (\mathrm{ii}) & (iii) & (i) & (v) \end{matrix}$

**Answer: C**

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**2.** Which one of the following is double salt?

A. Potash alum

B. Potassium sulphate

C. Aluminium Sulphate

D. Ammonium sulphate

**Answer: A**

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**3.** Most easily liquefiable gas is ..... .

A. Ar

B. Ne

C. He

D. Kr

**Answer: C**

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**4.** Which metal is used in manufacturing artificial joints?

A. Molybdenum

B. Titanium

C. Tungsten

D. Iron

**Answer: B**

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**5.** In which of the following coordinaton entities the magnitude of $\Delta_0$ will be maximum?

A. $\left[Co(CN)_6\right]^{3-}$

B. $\left[Co(C_2O_4)_3\right]^{3-}$

C. $\left[Co(H_2O)_6\right]^{3+}$

D. $\left[Co(NH_3)_6\right]^{3+}$

**Answer: A**

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**6.** Which is the coordination number in both hep and ccp arrangements?

A. 12

B. 6

C. 4

D. 8

**Answer: A**

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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 ? $\left(R = 8.314 JK^{-1}mol^{-1}\right)$

A. $234.65 kJmol^{-1}K^{-1}$

B. $434.65 kJmol^{-1}K^{-1}$

C. $434.65 Jmol^{-1}K^{-1}$

D. $334.65 Jmol^{-1}K^{-1}$

**Answer: C**

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**8.** Following solutions were prepared by mixing different volumes of NAOH of HCL different concentrations.

(i) $60mL\frac{M}{10}HCI + 40mL\frac{M}{10}NaOH$

(ii) $55mL\frac{M}{10}HCI + 45mL\frac{M}{10}NaOH$

(iii) $75mL\frac{M}{5}HCI + 25mL\frac{M}{5}NaOH$

(iv) $100mL\frac{M}{10}HCI + 100mL\frac{M}{10}NaOH$

pH of which one of them will be equal to I?

A. iv

B. (i)

C. (ii)

D. (iii)

**Answer: D**

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**9.** The electrode used in SHE is made of ..... .

A. graphite

B. copper

C. platinum

D. iron

**Answer: C**

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**10.** Which one of the following is an example for homogeneous catalysis?

A. manufacture of ammonnia by Haber's process

B. manufacture of sulphuric acid by contact process

C. hydrogenation of oil

D. Hydrolysis of sucrose in presence of all HCl

**Answer: D**

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**11.** The alkaline hydrolysis of fats to give glycerol is known as ..... .

A. Esterification

B. Hydroboration

C. Hydration

D. Saponification

**Answer: D**

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**12.** Consider the following statements:

(i) In Rosenmund reduction Barium sulphate act as a catalyst poison palladium catalyst, so that aldehyde cannot be further reduced to alcohal

(ii) Side chain oxidation of toluene using strong oxidising agent gives benzoic acid.

(iii) Friedle crafts reaction is the best method used to prepare aliphatic ketons.

Which of the above statement is/are correct?

A. (iii) only

B. (i) & (ii)

C. (i) & (iii)

D. (ii) & (iii)

**Answer: B**

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**13.** Assertion : Acetamide on reaction with KOH and bromine gives acetic acid.

Reason : Bromine catalyses hydrolysis of acetamide.

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 in not the correct explanation of assertion.

C. assertion is true but reason is false

D. both assertion and reason are false

**Answer: D**

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**14.** Which is the product formed when fructose undergoes partial reduction with sodium amalgam and water?

A. Sorbital + mannitol

B. D-mannose + D-galactose

C. Gluconic acid+ saccharic acid

D. Aldehyde + ketone

**Answer: A**

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**15.** The polymer used in making blankets(artificial wool) is

A. polystyrene

B. PAN

C. polyester

D. polythene

**Answer: B**

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Part Ii

**1.** Predict the conditions under which

(a) Aluminium might be expected to reduce magnesia.

(b) Magnesium could reduce alumina.

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**2.** Give the uses of carbon dioxide.

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**3.** What is the coordination entity formed when excess of liquid ammonia is added to an aqueous solution of copper sulphate?

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**4.** Atoms X and Y form bcc crystalline structure, Atom X is present at the corners of the cube and Y is at the centre of the cube. What is the formula of the compound ?

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**5.** Define zero order reaction. Give the unit for its rate constant (k).

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**6.** Distinguish between galvanic cell and electrolytic cell.

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**7.** When phenol is treated with propan -2-ol in the presence of HF, Friedel-Craft reaction takes place. Identify the products.

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**8.** Human cannot use cellulose as food- Why ?

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**9.** What are antibiotics?

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## Part Iii

**1.** Explain the types of silicones.

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**2.** Give the properties of inter halogen compounds.

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**3.** Based VB theory explain why $\left[Cr(NH_3)_6\right]^{3+}$ is paramagnetic , while $\left[Ni(CN_4)^{2-}\right.$ is diamagnetic.

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**4.** A first order reaction is 20% completed in 10 minutes. Calculate the time taken for the reaction to go to 80%

completion.

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**5.** Explain common ion effect with an example.

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**6.** Mention the uses of Brownian movement.

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**7.** How will you convert benzaldehyde into the following compounds?

(i) benzophenone (ii) benzoic acid (iii) 2-hydroxyphenylaceticacid.

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**8.** Complete the following.

(i) $CH_3CN \xrightarrow[C_2H_5OH]{Na-Hg} ?$ (ii) $CH_3NC \xrightarrow[C_2H_5OH]{Na-Hg} ?$

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**9.** Answer the following questions briefly:

(i) What are reducing sugars?

(ii) What is meant by denaturation of a protein?

(iii) How is oxygen replenished in our atmosphere?

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## Part Iv

**1.** (a) (i) What is Cementation?

(ii) Write a notes on ionisation enthalpy in p-block elements?

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**2.** (b) (i) Give the uses of sulphuric acid..

(ii) How alloys are formed in d-block elements?

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**3.** (a) (i) A solution of $\left[Co(NH_3)_4I_2\right]Cl_2$ when treated with $AgNO_3$ gives a white precipitate. What should be the formula of isomer of the dissolved complex that gives yellow

precipitate with $AgNO_3$. What are the above isomers called?

(ii) Write the following in the complex $\left[Cr(\text{en})_3\right]\left[CrF_6\right]$

(i) Type of complex (ii) Ligands (iii) central metal

(iv) Oxidation state of central metal (v) IUPAC name

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**4.** (b) (i) KF crystallizes in fcc structure like sodium chloride. Calculate the distance between $K^+$ and $F^-$ in KF . (given: density of KF is $2.48 gcm^{-3}$)

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

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**5.** (a) (i) Point out the difference between ionic product and solubility product.

(ii) The solubility of AgCl in water at 298K is $1.06 \times 10^{-5}$ mole per litre. Calculate is solubility product at this temperature.

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**6.** (b) (i) Describe about lithium-ion battery and its uses.

(ii) Give reasons for the following

(1) Rusting of iron is quicker in saline water than in ordinary water.

(2) Aluminium metal cannot be produced by the electrolysis of aqueous solution of aluminium salt.

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**7.** (a) (i) Heat of adsorption is greater for chemisorptions than physisorption. Why?

(ii) Give three examples for heterogeneous catalysis.

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**8.** (b) (i) How is Aniline converted into Phenol?

(ii) What is the action of HCN on

(1) propanone (2) 2,4-dichlorobenzaldehyde.

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**9.** (a) (i) An aromatic compound 'A' of molecular formula $C_7H_7ON$ undergoes a series of reactions as shown below. Write the structures of A, B,C,D and E in the following

reactions.

$$\underset{(A)}{C_7H_7ON} \xrightarrow{Br_2+KOH} \underset{\downarrow CHCl_3+NaOH}{\underset{(D)}{C_6H_5NH_2}} \xrightarrow[273K]{NaNO_2+HCl} \underset{\downarrow KI}{\underset{E}{(B)}} \xrightarrow{CH_3CH_2OH} (C)$$

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**10.** (b) (i) Write a note on co-polymer.

(ii) What is the difference between elastomers and fibres? Give one example of each

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