CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

SAMPLE PAPER - 5 (SOLVED)

Part I Choose The Correct Answer

1. The change in Gibbs free energy for a reaction is expanded by.....

A. $\Delta G = \Delta H + T\Delta S$

B. $\Delta G = \Delta H - TS$

C. G = H - TS

D. $\Delta G = \Delta H - T\Delta S$

Answer: D

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2. Consider the following statements

(i) In interhalogen compounds , the central atom will be the smaller one.

(ii) It can be formed only between two halogen and not more than two halogens.

(iii) They are strong reducing agents.

Which of the above statement (is)is /are not correct?

A. (i) only

B. (ii) and (iii)

C. (i) and (iii)

D. (iii) only

Answer: C

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3. Thermodynamically the most stable form of carbon is....

A. Diamond

B. graphite

C. Fullerene

D. none of these

Answer: B

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4. Which one of the following transition element has maximum oxidation state ?

A. Manganese

B. Copper

C. Scandium

D. Titanium

Answer: A

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5. An excess of silver nitrate is added to 100 ml of a 0.01 M solution of pentaaquachloridochromium (III) chloride. The number of moles of AgC1 precipitated would be

A. 0.02

B. 0.002

C. 0.01

D. 0.2

Answer: B

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6. Match the following.

List - I	List - II
A . Schottky defect	1. $AgBr$
B. Frenkel defect	2. FeO
C. Metal excess defect	3. $NaCl$
D. Metal deficiency defect	4. ZnO

A.

code	A	B	C	D
(a)	2	4	3	1

B.

code	A	B	C	D
(a)	3	1	4	2

C.

code	A	B	C	D
(a)	4	2	1	3

D.

code	A	B	C	D
(a)	1	3	2	4

Answer: B

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7. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is

A. zero

B. one

C. Fraction

D. none of these

Answer: A

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8. Which of the following is not a solution ?

A. $CH_3COOH + CH_3COONa$

B. $NH_4OH + NH_4Cl$

C. $H_2CO_3 + NaHCO_3$

D. $NaOH + NaCl$

Answer: D

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9. In the electrochemical cell: $Zn|ZnSO_4(0.01M)||CuSO_4(1.0M)|Cu$, the emf of this Daniel cell is E_1. When the concentration of $ZNSO_4$ is changed to 1.0 M and that $CuSO_4$ changed to 0.01M, the emf changes to E_2. From the followings, which one is the relationship between E_1 and E_2?

A. $E_1 < E_2$

B. $E_1 > E_2$

C. $E_2 = 0 \uparrow E_1$

D. $E_1 = E_2$

Answer: B

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10. Which method is used to prepare metal sols?

A. ultrasonic dispersion

B. mechanical dispersion

C. Bredig's arc method

D. peptisation

Answer: C

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11. What are the products formed when methoxy ethane is treated with hydroiodic acid?

A. Phenol + iodomethane

B. Iodomethane + Ethanol

C. Iodothane + Methanol

D. Iodobenzene + Methane

Answer: B

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12. Predict the product Z in the following series of reactions

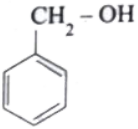
Ethanoic acid

$$\xrightarrow{PCl_5} X \xrightarrow[\text{Anhydrous } AlCl_3]{} Y \xrightarrow[(ii)\, H_3O^+]{(i)\, CH_3MgBr} Z$$

A. $(CH_3)_2C(OH)C_6H_5$

B. $CH_3CH(OH)C_6H_5$

C. $CH_3CH(OH)CH_2 - CH_3$

D. 

Answer: A

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13. Assertion (A) : 2 - nitro propane is more acidic than nitro methane.

Reason (R) : when the number of alkyl group attached to a carbon increases, acidity decreases. due to +1 effect of alkyl groups.

A. Both A and R are correct but R is not the correct explanation of of A

B. Both A and R are correct and R is the correct explanation of A

C. A is correct but R is wrong

D. A is wrong but R is wrong

Answer: D

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14. Glucose (HCN) Product (hydrolysis) Product (HI + Heat) A, the compound A is

A. Heptanoic acid

B. 2 - Iodohexane

C. Heptane

D. Heptanol

Answer: A

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15. Which one of the following is used to provide relief from the allergic effects?

A. cetrizine

B. ampicillin

C. erythromycin

D. milk of magnesia

Answer: A

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Part Ii

1. Magnesite (Magnesium carbonate) is calcined to obtain magnesia, which is used to make refractory bricks. Write the decomposition reaction.

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2. Mention the application of Xenon ?

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3. Compare the stability of Ni^{4+} and Pt^{4+} from their ionisation enthalpy values.

IE	Ni	Pt
I	737	864
II	1753	1791
III	3395	2800
IV	5297	4150

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4. Why is glass considered as super cooled liquid ?

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5. Write Arrhenius equation and explains the terms involved.

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6. Can Fe^{3+} oxidises Bromide to bromime under standard conditions ? Given : $E^{\circ}_{Fe^{3+}\,|\,Fe^{2+}} = 0.771 \quad E^{\circ}_{Br_2\,|\,Br^-} = -1.09V$

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7. What are uses of Urotropine ? Given its structure .

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8. Ethylamine is soluble in water whereas aniline is not . Give reason.

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9. What are antihistamines ? Give example and mention its use.

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Part Iii

1. Explain the action of heat on boric acid .

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2. Draw the structure of (a) white phosphorous (b) red phosphorous

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3. Why do zirconium and Hafnium exhibit similar properties?

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4. How will derive the formula of density of a unit cell ?

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5. The salt of strong acid and strong base not undergo hydrolysis . Explain .

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6. Write a note about medicinal applications of colloids .

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7. Predict the major product, when 2-methyl but-2-ene is converted into an alcohol in each of the following methods.

(i) Acid catalysed hydration.

(ii) Hydroboration

(iii) Hydroxylation using Bayer's reagent.

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8. Write the reactions of aromatic and aliphatic primary amines with nitrous acid.

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9. What are the advantages of food additives ?

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10. (a) (i) Out of coke and CO_3 , which is better reducing agent for the reduction of ZaO ? Why?

(ii) An element (A) extracted from kernite. A reacts with nitrogen at high temperature give B.A reacts with alkali to from C . Find out A, B and C Give the chemical equations.

[OR]

(b) (i) Deduce the oxidation number oxygen in hypofigynous acid-HOF.

(ii) Which catalyst is used in the conversion of acetaldehyde to acetic acid ? Given equation .

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11. Prove that H_2SO_4 is a strong dibasic acid.

(ii) Distinguish tetrahedral and octahedral voids.

(b) In an octahedral crystal field , draw the figure to show splitting of d orbital's.

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12. (a) Explain briefly the collision theory of bimolecular reactions .

[Or]

[b] Discuss about the hydrolysis of salf of weak acid and week base and derived pH value for the solution.

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13. (i) Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 189 and 160 mho

$cm^2 \text{equity}^{-1}$. Calculate the equivalent and molar conductance of the electrolyte $Al_2(SO_4)_3$ at infinite dilution .

(ii) Suggest a way to determine λ_m° value of water .

(b) (i) Why does bleeding stop by rubbing moist alum.

(ii) How is glycerol reacts with fuming nitric acid ? (or) How would you convert glycerol into nitroglycerine ?

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14. (a) (i) What is crossed cannizaro reaction ?

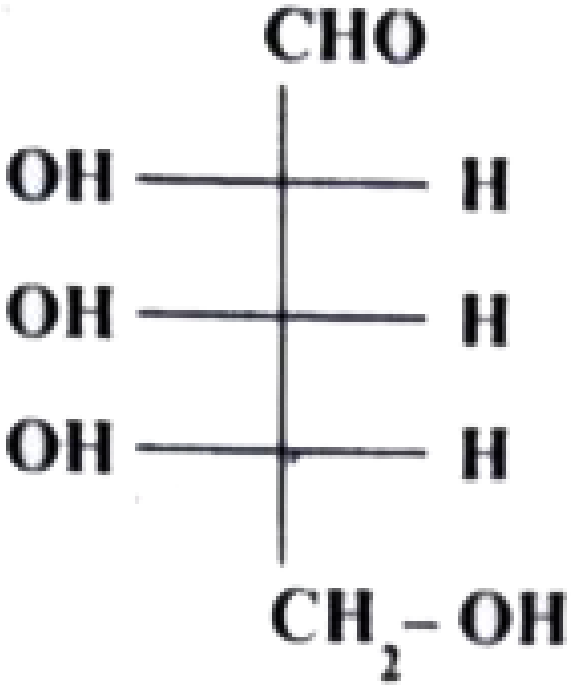
Explain it .

(ii) Complete the following reaction .

1.  + Conc. NHO_3 $\xrightarrow[333\ K]{\text{Conc. } H_2SO_4}$ (A) $\xrightarrow{Sn\ /\ HCl}$ (B)

2.  $\xrightarrow{Br_2\ /\ H_2O}$ (A) $\xrightarrow[0°C]{NaNO_2 + HCl}$ (B) $\xrightarrow{H_3PO_2}$ (C)

(b) (i) Is the following sugar , D - sugar or L - sugar ?



(ii) Writer a not on vulcanization of rubber.

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