MS-CIT
World-class Comprehensive Computer Course

Question Paper - I
Sub- Chemistry, Std. – 12th

MKCL KLiC Courses
Gateway to Knowledge Lit Careers

Marks : 70 **Time : 3 Hrs**

General Instructions:
1. Sections A : Q. No. 1 contains **10** multiple choice questions carrying **one mark** each
Q. No. 2 contains **8** very short answer type questions carrying **one mark** each
2. Section B : Q. No. 3 to Q. No. 14 are **12** short answer-I type questions **carrying two marks** each. Attempt any **eight** questions.
3. Section C : Q. No. 15 to Q. No. 26 are **12** short answer-II type questions carrying **three marks** each. Attempt any **eight** questions.
4. Section D : Q. No 27 to Q. No. 31 are **5** long answer type questions carrying **four mark** Attempt any **three** questions.

SECTION A

Q.1. Select and write correct answer. **10**

1. Which of the following haloalkane is not hydrolysed by SN^2 mechanism? 1
A) CH_3Br B) $CH_3CH_2CH_2Bf$ C) C_2H_5Br D) $(CH_3)_3CBr$

2. The boiling point of 0.1molal $K_4[Fe(CN)_6]$J solution will be (given $K_b$for water = 0.52K Kg mol^{-1}) 1
A) 100.52^0C B) 100.104^0C C) 100.26^0C D) 102.6^0C

3. Salicylic acid is produced when phenol in alcoholic KOH is treated with……. 1
A) $CHCI_3$ B) CH_3CI C) CCI_4 D) CH_2CI_2

4. pH of a solution is 4. It's $[H^+]$ is 1
A) 10^{-6}M B) $1/10^4$M C) 10^{-4} M D) 10^4M

5. Which of the following has the highest I.E. ? 1
A) Ti B) Mn C) Fe D) Ni

6. The general electronic configuration of lanthanoid is …….. 1
A) $[Rn]5f^{1-14}6d^{0-1}7s^2$ B) $[Xe]4f^{1-14}5d^{0-1}6s^2$
C) $[Kr]4d^{1-10}7s^{0-2}$ D) $[Ar]2d^{1-10}4s^{1-12}$

7. If exactly same weights in kg of gases are allowed to expand isothermally and reversibly from same initial to same final volumes, the work done will be maximum in case of 1
A) N_2 B) O_2 C) CO_2 D) CH_4

8. Two solutions have the ratio of their concentrations 0.4 and ratio of their conductivities 0.216. The ratio of their molar conductivities will be 1
A) 0.54 B) 11.574 C) 0.0864 D) 1.852

9. In hcp structure, the packing fraction is 1
A) 0.74 B) 0.84 C) 0.94 D) 0.64

10. Among the following compounds, the strongest acid is …… 1
A) $H_2C{=}CH_2$ B) C_6H_6 C) C_2H_6 D) CH_3OH

Q.2 Answer the following. **8**

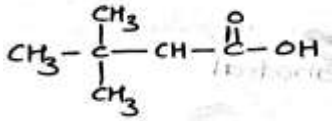
1. Define Henry's law constant and state its unit. 1

2. What is a rate constant? 1

3. What type of intermolecular force leads to high density polymer? 1

4. What is tincture of iodine? What is it use? 1

5. 1



IUPAC name of

6. Name the type of point defect that occurs in a crystal of zinc sulphide? 1

7. Why the tetrahedral complex do not exhibit geometrical isomerism? 1

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8. What are state variables? 1

SECTION B

Attempt Any Eight. **16**

Q.3. A current of 6 Amperes is passed through $A\ell C\ell_3$ solution for 15 minutes using Pt electrodes, when 0.504g of $A\ell$ is produced. What is the molar mass of $A\ell$? 2

Q.4. Why salt of strong acid and strong base does not undergo hydrolysis or is neutral to litmus? 2

Q.5. Prove that lowering of vapour pressure is a colligative property. 2
OR
Explain Raoult's law for solutions of non-volatile solute.

Q.6. Distinguish between SN^1 and SN^2mechanism. 2

Q.7. The following reaction takes place in a cell 2
$Zn^{2+}_{(aq)}+Co_{(s)} \rightarrow Co^{2+}_{(aq)} + Zn_{(s)}$
$E^0_{(Zn/Zn^{2+})} = 0.76V$
$E^0_{(co/co^{2+})} = 0.28V$
Calculate the change in Gibbs free energy.

Q.8. Discuss the superiority of CFT over VBT. 2

Q.9. Calculate the work done when 5 moles of an ideal gas expanded from $1m^3$to $10m^3$ against a constant external pressure of $2.026\times10^2 Nm^{-2}$. 2

Q.10. State, in brief, the properties of Actinoids. 2

Q.11. Discuss, in brief the chemical properties of $K_2Cr_2O_7$. 2

Q.12. Define molal depression constant or cryoscopic constant and give its unit. 2

Q.13. Write a note on colours in coordination compounds. 2

Q.14. How is phenol converted into (1) Benzene (2) Benzoquinone. 2

SECTION C

Attempt Any Eight. **24**

Q.15. Give balanced reaction 3
Aluminum is burnt in air

Q.16. What is lanthanide contraction? What are causes of lanthanide contraction 3

Q.17. How are aldehydes/ketone reduced to hydrocarbon by Wolf-Kishner reduction? 3

Q.18. For the gas phase decomposition of ethyl chloroformate, 3
$ClCOOC_2H_5 \rightarrow C_2H_5Cl+CO_2$ the rate constant at 470K is $1.05\times10^{-3}/s$ and the rate constant at 508 K is $1.11\times10^{-2}/s$. What is the activation energy for this reaction?

Q.19. Explain the following properties of ethers: (1) polarity (2) Boiling point (3) Miscibility 3

Q.20. How is Low Density Poly Ethylene prepared? 3

Q.21. Define degree of dissociation. Derive Ostwald's dilution law for CH_3COOH. 3

Q.22. Explain characteristics features of nanoparticles with examples. 3

Q.23. Write structures of 3
1. 2-Iodo-3-methylpentane 2. 1-1dichloro -2,2-dimethylproane
3. 3-Chlorohexane

Q.24 Write a note on substitution impurity defect 3

Q.25 4.4×10^{-2}kg of CO_2 are compressed isothermally and reversibly at 293K from the initial pressure of 150kPa when the work obtained is 1.245kJ. find the final pressure.($R=8.314JK^{-1}\ mol^{-1}$) 3

Q.26 Explain the cyclic structure of glucose. What are anomers? 3

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SECTIION D

Attempt Any Three. **12**

Q.27 I. How will you convert (a) Ethanoic acid into propanoic acid (b) Propanoic acid into Ethanoic acid. 4

II (a) propanoic acid into ethanamine (b) Ethan amine into propanoic acid. 4

Q.28. I. Explain what happens to entropy changes in 4

(i) Dissolution of solid I_2in water.

(ii) Dissociation of H_2molecule into atoms

II. Calculate the electrode potential at 298K when $E^0_{electron}$ =0.5355 V. Pt | $I_{2(R)}, I^-(0.03M)$

Q.29. I. Based on the VBT predict structure and magnetic behavior of the $[\mathrm{Ni}(NH_3)_6]^{3\oplus}$complex. 4

II. What is the difference between double salt and coordination complex? 4

Q.30. I. What is the structure of glucose proposed by Fischer? 4

II. Define and explain standard enthalpy of formation with example. 4

Q.31. I. What is the oxidation state of Xenon in $XeOF_4$, XeO_3, XeF_6, XeF_4, XeF_2 4

II. Give reasons for anomalous behavior of Fluorine. 4