D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1

GENERAL CHEMISTR-IV (15CCH5A)

UNIT-I SECTION –A 2 Marks

1. Name the elements of Carbon family
2. What is catenation?
3. What is carborundam? Write its uses.
4. Write any two similar properties of Carbon & Silicon?
5. Why is CO_2 a gas and SiO_2 a gaint molecules?
6. What are carbides? How do we classify them?
7. CCl_4 resists hydrolysis with $SiCl_4$ gets readily hydrolysis?
8. What are P block elements?
9. Mention the structure of IF_3& IF_7.
10. Write the structure of hydroxylamine? What are its uses?
11. What are interhalogen compounds? Give examples.

SECTION-B 5marks

1. Discuss the comparative study of N_2 family?
2. Discuss the comparative study of Carbon family?
3. How is iodine monochloride prepared? How does it react with: (i) Chlorine (ii) KI
4. How areIF_7 and IF_5 prepared and how are react with H_2O?
5. Explain the hybridization with reference to BrF_3 and IF_5?
6. Explain the basic properties of Iodine.
7. Write notes on interhalogen compounds as solvent systems.
8. How is anhydrous peroxomonosulphuric acid prepared?
9. Describe the electrolytic preparation of peroxo disulphuric acid?
10. Give the uses of peroxy disulphuric acid.
11. Write notes on stability of Caro's acid.
12. Write note on Marshall's acid.

13. Write a comparative study of chemistry of As, Sb, & Bi
14. Write a note on the anomalous behaviour of O_2.
15. How is iodine tetra fluoride prepared? Explain its uses.

SECTION-C 10 marks

1. Write the preparation, properties, and uses of peroxy acids of sulphur.
2. Give a comparative study of carbon family
3. Give a comparative study of O_2 family.
4. Write the preparation and properties and uses of hydrazine.
5. Explain the structure, preparation, properties, of any two interhalogen compounds.
6. Write the preparation and properties of carbides.
7. Write the preparation and properties and uses of hydroxyl amine.

UNIT II SECTION-A 2 Marks

1. Write a note in basic nature of amines.
2. What is meant by diazotisation?
3. Write the coupling reaction of aniline.
4. Write a note on Libermann's reaction?
5. Why aniline is less basic than methylamine.
6. What is Carbylamine reaction?
7. What is Hoffmann's bromamide reaction?
8. How is acetic acid prepared from Grignard Reagent?

SECTION-B 5 marks

1. Write notes on (i) Gabriel's pthalamide reaction.
2. What are the differences between primary, secondary and tertiary amines?
3. Write note on basic nature of aniline.
4. Write short note on Friedelcraft's alkylation . Write its mechanism.
5. How would you convert the following? Give details.

$CH_3COCH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$

$CH_3CHO \rightarrow CH_3CH_2OH$

$HCHO \rightarrow CH_3OH + HCOONa$

SECTION-C 10 marks

1. Explain mechanisms of Reformatsky& Witting reaction.
2. Discuss the mechanisms of Mannichand Friedel crafts reactions.
3. Write thereactions of ethyl amine with Grignard reagent
4. Write the coupling and condensation reactions of aniline.
5. Discuss the ring substitution reactions of aniline.
6. Write the preparation and properties and uses of Aniline.

UNIT-III SECTION-A 2 Marks

1. What is Friedel craft's reaction?
2. What is Rosenmunds reduction reaction?
3. How will you prepare benzaldehyde using Stephens method?
4. How will you synthesize acetone from alcohol?
5. Write the IUPAC name of CH_3COOH.
6. Write the preparation of acetic acid from alcohols.
7. How will you prepare acetic acid using Grignard reagent?
8. How will you prepare acetic acid from nitrile?
9. Give the esterification reaction of acetic acid.
10. Write the dehydration reaction of acetic acid.
11. What happens when acetic acid is treated with $LiAlH_4$.
12. What happens when acetic acid is treated with HI and red phosphorous?
13. How will you prepare benzoic acid using organometallic compounds?
14. How will you prepare benzoic acid by Friedel Craft's reaction?
15. Write the dehydration reaction of benzoic acid.
16. Write the IUPAC name of phthalic acid.
17. Write the IUPAC name of oxalic acid.
18. Give the general method of preparation of acetoacetic ester
19. Give the action of heat on malonic acid.

SECTION-B 5 marks

1. Discuss the mechanism of Reformatsky reaction.

2. Write notes on Cannizzaros reaction.
3. Write short note on Friedel craft's reaction.
4. Write the mechanism of Aldol condensation?
5. Explain the acidic nature of monocarboxylic acids.
6. Explain why chloroacetic acid is stronger than acetic acid.
7. Why p-nitro benzoic acid is stronger than benzoic acid?
8. Explain the acid strengths of substituted benzoic acids.
9. Write the general method of preparation of dicarboxylic acids from acetoacetic ester.

SECTION-C 10 marks

10. Explain mechanisms of Reformatsky and Witting reaction.
11. Discuss the mechanismsof Benzoin condensation and Michael addition reaction
12. Explain the mechanisms of Perkin's reaction & Benzoin condensation reaction.
13. Explain the mechanisms of Knoevenegal reaction andCannizzaros reactions.
14. Write the action of heat on oxalic acid, adipic acid, Glutaric acid and phthalic acid.
15. Explain the acid strengths of substituted benzoic acids.
16. Give the preparation and properties of acetic acid.
17. Write the preparation and properties of benzoic acid.

UNIT-IV SECTION-A 2 Marks

1. State Henry's law.
2. State Raoult's law.
3. What are ideal solutions.
4. What are real/non-ideal solutions?
5. Define activity.
6. Give vapour pressure-composition curve for ideal solution.

7. What are azeotropic mixtures?
8. What is the enthalpy change of mixing for an ideal solution?
9. What is the volume change of mixing for an ideal solution?
10. Give an example for azeotropic mixtures.
11. Give the thermodynamical definition for an ideal solution.

SECTION-B 5 Marks

1. Derive an expression for free energy change of mixing for an ideal solution.
2. Explain vapour pressures of an ideal and non-ideal solutions.
3. Explain activity of a component in an ideal solution.
4. Explain vapour pressure – composition and boiling point - composition curves of completely miscible binary solutions

SECTION-C 10 marks

1. Write notes on fractional distillation of binary liquid solutions.
2. Derive an expression for free energy change , volume change, enthalpy change and entropy changes of mixing for an ideal solution

UNIT-V SECTION-A 2 marks

1. What are colligative properties?
2. Define ebullioscopic constant.
3. Define cryoscopic constant.
4. What is Van't Hoff factor?
5. What is mean by abnormal molar mass?
6. Define CST.
7. What is upper CST/ UCST?
8. What is lower CST/LCST?
9. State Nernst distribution law.
10. Write the unit of ebullioscopic constant.

SECTION-B 5 marks

1. Write the effects of impurities on CST.
2. Explain abnormal molar mass.
3. Write thermodynamic derivation of elevation in boiling point.

4. Write thermodynamic derivation of depression in freezing point
5. Write notes on CST.

SECTION-C 10 marks

1. Write thermodynamic derivation and applications of Nernst Distribution law.
2. Write notes on CST.
3. Write thermodynamic derivation of elevation in boiling point.