THIRD SEMESTER EXAMINATION 2015-16

ECY301

APPLIED ENGINEERING CHEMISTRY

Time: 3 Hours **Max. Marks: 100**

Note

- Attempt all questions.
- Marks and number of question to attempt from the section is mentioned before each section.
- Assume missing data suitably .Illustrate the answer with suitable sketch.

1 Attempt any four of the following [4X5]

a. Outline the mechanism of Wittig reaction.
b. What is Crown ether? Explain Williamson Synthesis for the preparation of ether.
c. What is difference between Mesylates & Tosylates? How Mesylate and Tysolate formed from alcohol.
d. Explain Hell- Volhard Zelinsky reaction with suitable mechanism.
e. How can you prepare following compounds from diazonium salt?
   (i) *O*- bromotoluene and *p*- romotoluene.
   (ii) Methyl orange(an acid base indicator)

Or

Suggest a reason for the use of excess mineral acid in the diazotization process.

2. Attempt any **four** of the following. [4X5]

a. (i) Explain the term Aromatic , non aromatic and Antiaromatic with suitable example (3)
   Account for the aromaticity of pyrole. (2)
b. Explain selectivity and reactivity of Lithium Alluminium hydride with two suitable examples.
c. Differentiate between stereospecific and stereoselective reaction.
d. Discuss the role of stereoisomerism in drug Ibuprofen.
e. What is conformational analysis? Discuss the stability of most stable conformer of n-butane.
f. Discuss the stability of chair conformation of cyclohexane with suitable energy diagram.

3. Attempt any **four** parts of the following. [4 X 5]

a. What are nucleotides? Differentiate between RNA & DNA.
b. Discuss the structure of fructose. Explain two chemical properties of it which can prove it to be polyhydroxy ketone.

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c. Discuss both Killiani-Fischer synthesis and Ruff degradation in carbohydrate chemistry.
d. Discuss the classification and denaturation of protein. What is diffe between protein and conjugated protein?
e. Discuss the importance of lipid in life with suitable example.
f. Explain the industrial importance of Vitamins with four examples.

4. Attempt any **four** of the following. [4 x 5]

a. What is the principle of conductometric titration? What are their advantages?
b. What are potentiometric titration? Give some of the important advantages of this titration?
c. Discuss the principle, importance and application of mass spectrometry.
d. Discuss briefly the application of HPLC in the separation of amino acid and protein.
e. What is Gas chromatography? Give some important application of Gas chromatography.
f. What is atomic absorption? What are its advantages and disadvantages?

5. Attempt any **four** of the following. [4x5]

a. Define Surface Tension. Give some practical applications of Surface Tension.
b. How is Langmuir's adsorption isotherm different from Freundlich's isotherm?
c. What is meant by homogenous and heterogeneous catalysis? Differentiate between them.
d. What is the vapour pressure of pure solvent if the vapour pressure of a solution of Sucrose (C6H12O6)in 100g of ethanol (C2H6O)in 55mmHg?
e. What is an enzyme's EC number? What is the rate determining step of an enzyme catalysed reaction?

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