III.SEMESTER B.TECH. (CHEMICAL ENGINEERING)

END SEMESTER EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: ORGANIC CHEMISTRY [CHM2101]

REVISED CREDIT SYSTEM

Time: 3 Hours 28/12/2016 **MAX. MARKS: 50**

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. What are proteins? Discuss and identify the four levels of protein structure. Explain how the structure of a protein affects its properties and how denat-uration changes the structure.

1B. Explain the synthesis of dipeptide using carbobenzoxy chloride for protecting amino group. Predict products of the following reactions of amino acids:

Esterification

i. Acylation

ii. Reaction with ninhydrin.

iii. Reaction with foemaldehyde

1C. a. Define the following terms;

i.Diazotisation ii. Mutarotation

b. Give reason- Benzene is more readily undergo nitration than that of nitrobenzene

(5+3+2)

2A. What are dyes? How are they classified on the basis of structure? Explain the O. N. Witt's theory of colour.

2B. Give the reaction mechanism of sulphonation and Friedel-crafts acylation of benzene.

2C Write the chemical equation for the reaction of glucose with following reagents

i. $NaBH_4$

ii. NH_2OH

iii. HI/P

iv. Con.HNO_3 **(5+3+2)**

3A. What are polysaccharides? Differentiate between maltose and lactose. Explain the structure of starch.

3B. Give a method of preparation and uses of the following:

i. Alizarin

ii. Congo red

iii. Magenta

3C. How is pyrrole synthesized? Why in pyrrole electrophilic substitution at takes place 2-postion.

(5+3+2)

4A. Outline the synthesis of the following:

i. Aspirin from phenol

ii. Barbital from chloroacetic acid

4B. What are E & Z isomers in geometrical isomerism? Illustrate. Differentiate between singlet and triplet carbenes.

4C. Differentiate between the following:

i. Reducing and non-reducing sugars

ii. Dyes and pigments

(5+3+2)

5A. Discuss the geometry and factors that stabilize carbanions. Give two examples of reactions mediated by carbanion.

5B. What is a meso compound? Differentiate between enantiomers and diastereomers giving suitable examples?

5C. Define aromaticity. Give the preparation of quinoline by Friedländer synthesis and discuss its mechanism

(5+3+2)

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