MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

III.SEMESTER B.TECH. (CHEMICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: ORGANIC CHEMISTRY [CHM2101]

REVISED CREDIT SYSTEM

Time: 3 Hours **Date: 25/11/2016** **MAX. MARKS: 50**

Instructions to Candidates:

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

1A. What are carbohydrates? Discuss the evidence leading to the cyclic structure of D-glucose. Write the chemical equation for the reaction of fructose with phenyl hydrazine.

1B. Show how one of the following synthesis might be used to make a given amino acid:

i. Gabriel-malonic ester synthesis

ii. Strecker synthesis

iii. HVZ followed by NH_3

1C. Give reason of the following:

i. Pyridine undergoes electrophilic substitution at 3-position.

ii. Benzene undergoes electrophilic substitution reactions where as alkenes undergo addition reactions.

(5+3+2)

2A. Discuss the valance bond theory of colour. Give a method of preparation and uses of the following:

i. Methyl violet ii. Rosaniline

iii. Manchester yellow iv. Naphthol green Y

2B. Discuss the molecular orbital structure of benzene. Write the resonance structure of pyrrole and quinoline.

2C. Describe the conversion of aldohexose into aldopentose.

(5+3+2)

3A. What are enzymes? How are they classified? Explain the mechanism of enzyme action and factors affecting the rate of enzyme catalyzed reaction.

3B. What is electrophilic substitution reaction? Give the mechanism of nitration and halogenation of benzene.

3C. Give the following synthesis starting from pyridine

i. Amination by sod.amide

ii. Arylation by organolithium compound

(5+3+2)

4A. What are carbocations? Discuss the factors that stabilize carbocations. Why benzylic cation is more stable than allylic cation?

4B. Describe the isomerism in oximes. Explain metamerism with an example.

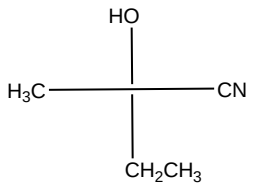
4C. Write any two colour tests of protein. Mention the important functions of proteins?

(5+3+2)

5A. How is diazepam prepared? What is it used for? Write the mechanism for Anti-Markovnikov addition of HBr to propene.

5B. What is a stereogenic center? Assign R or S configuration to the stereogenic centres of following molecules showing the steps followed.

i)



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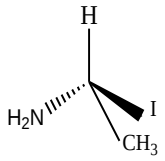

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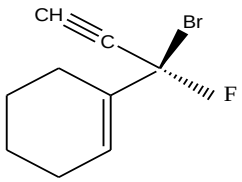

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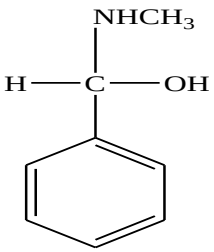

5C. Explain the structure and uses of cellulose.

(5+3+2)

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