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Total No. of Pages : 02

Total No. of Questions : 11

M.Sc. (Chemistry) (2018 Batch) (Sem.-2)

REACTIVE INTERMEDIATES-II

Subject Code : CHL-412-18

M.Code : 75982

Time : 3 Hrs. Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains EIGHT questions carrying FIVE marks each and students have to attempt any SIX questions.**
3. **SECTION-C will comprise of two compulsory questions with internal choice in both these questions. Each question carries TEN marks.**

SECTION-A

1. Answer Briefly :

a. Addition of an electrophile to 2,4-hexadiene generates two intermediates. Write their structures and tell which one is more stable.

b. Discuss the use of organozinc reagent for nucleophilic addition reaction.

c. Write the mechanism of Wittig-Horner reaction.

d. Selenium dioxide is quite often used in bringing about allylic oxidation. Presuming selenious acid or equivalent as the oxidant. Write steps involved in this process.

e. What reagents are used for the oxidation of glycols and amines to aldehyde and ketones? Write their reactions only.

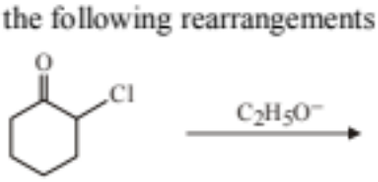
f. What is the use of 9BBN reagent in organic chemistry?

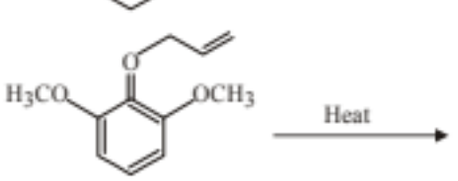
g. Write the reagents for hydrogenation of alkynes to *cis* and *trans* alkenes.

h. Write a short note on Neber rearrangement.

i. Discuss the use of Arndt-Eistert synthesis.

j. Predict the products and name the following rearrangements :

(i) 

(ii) 

SECTION-B

2. Discuss the mechanistic and stereochemical outcome for the addition of bromine in electrophilic addition reactions.
3. Explain briefly free radical addition reaction of hydrogen halides and thioles to carbon-carbon double bonds. Illustrate with examples for the possibility of these reactions.
4. With suitable examples, illustrate the role of $Pb(OAc)_4$ and O_3 for the oxidation of olefinic double bond.
5. How will you oxidize alcohols through Swern Oxidation and Pyridinium Chlorochromate (PCC)? Support your answer with suitable mechanism.
6. Discuss with mechanism for the use of sodium triacetoxyborohydride and diisopinocamphenyl borane.
7. What are the product(s) formed when (i) an aromatic hydrocarbon and (ii) an α,β-unsaturated ketone is treated with sodium and liquid ammonia? Discuss the mechanism of formation of these products.
8. Write a short note on oxymercuration and Sharpless asymmetric epoxidation reactions.
9. With suitable example, illustrate the role of various reagents used for the oxidation of glycols, halides and amines.

SECTION-C

10. Write a short note on the following rearrangements :
    a. Pinacol-pinacolone rearrangement (5)
    b. Criegee rearrangement (5)

OR

10. a. Discuss the mechanistic and stereochemical aspects of the reduction by lithium aluminium hydride. What is meant by steric approach control and product development control in such reactions? (6)
    b. With suitable examples, illustrate the oxidation of methylene and aryl methanes. (4)
11. Discuss with mechanism for following rearrangements : (2.5×4)
    a. Isonitrile-Nitrile rearrangement
    b. Hofmann rearrangement
    c. Demanov rearrangement
    d. Wagner-Meerwein rearrangement

OR

11. What is Fries rearrangement and Baeyer-Villiger rearrangement? Illustrate their mechanism by a suitable example. (10)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.