Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 11

M.Sc.(Chemistry) (2018 Batch) (Sem.-1)

REACTIVE INTERMEDIATES-I

Subject Code : CHL-402-18

M.Code : 75114

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 each question carries TEN marks.**

SECTION-A

Q1 Answer briefly :

a. What is Huckel's rule? Discuss the aromaticity of following compounds:

(a) (b) (c)

b. Write a short note on Taft equation.

c. Discuss the stability of arynes.

d. Why vinyl and aryl halides are inert towards nucleophilic substitution reactions?

e. Draw Sommelet-Hauser rearrangement.

f. Give the product of the reaction of CO + HCl in the presence of $CuCl/AlCl_3$ with

(i) C_6H_6 and

(ii) $CH_3OC_6H_5$

g. What do you understand by ipso attack?

h. Write a short note on Chugaev elimination.

i. E2 elimination reactions are stereospecific and El reactions are not. Why?

j. Bromination of 1-butene with NBS yields two products.

$CH_3CHBrCH = CH_2$ and $CH_3CH = CHCH2Br$

Which one will be the major product and why?

SECTION-B

Q2 Discuss the formation and stability of carbenes and nitrenes.

Q3 Explain briefly thermodynamic and kinetic requirements for reactions.

Q4 How addition-elimination reaction is different from elimination-addition reaction? Describe elimination-addition reaction of benzyne and SNAr reactions.

Q5 How classical and non-classical carbocations are different from phenonium ions? Explain each term with suitable examples.

Q6 How substrate and solvent polarity affects the reactivity in aliphatic electrophilic substitution reactions?

Q7 Suggest the mechanism of Hoben-Hoesch reaction and Diazo coupling.

Q8 How do you define autooxidation? Discuss the mechanism for the conversion of benzaldehyde to benzoic acid.

Q9 Discuss El and E2 reactions. How these are different from ElcB reaction?

SECTION-C

Q10 Discuss the effect of substrate structure, nucleophile, leaving group and reaction medium on SN1 and SN2 reactions. (10)

OR

Q10 Suggest the mechanism of Bechmann and Vilsmeir reactions. (10)

Q11 (a) How do you explain the *ortho-para* directing ability of alkyl group and meta directing ability of nitro group in electrophilic aromatic substitution? Discuss with different resonating structures. (6)

(b) Discuss the elimination reactions of dehydrohalogenation and dehalogenation. (4)

OR

Q11. Write a short note on Hunsdiecker reaction and Sandmeyer Reaction (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.