

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

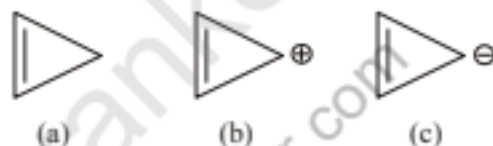
INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains EIGHT questions carrying FIVE marks each and students have to attempt any SIX questions.
- 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:



- Write a short note on Taft equation.
- Discuss the stability of arynes.
- Why vinyl and aryl halides are inert towards nucleophilic substitution reactions?
- Draw Sommelet-Hauser rearrangement.
- Give the product of the reaction of $\text{CO} + \text{HCl}$ in the presence of $\text{CuCl}/\text{AlCl}_3$ with
 - C_6H_6 and
 - $\text{CH}_3\text{OC}_6\text{H}_5$
- What do you understand by ipso attack?
- Write a short note on Chugaev elimination.
- E2 elimination reactions are stereospecific and E1 reactions are not. Why?
- Bromination of 1-butene with NBS yields two products.
 $\text{CH}_3\text{CHBrCH}=\text{CH}_2$ and $\text{CH}_3\text{CH}=\text{CHCH}_2\text{Br}$
 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 S_NAr 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 Hohen-Hoesch reaction and Diazo coupling.
- Q8 How do you define autooxidation? Discuss the mechanism for the conversion of benzaldehyde to benzoic acid.
- Q9 Discuss $E1$ 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 S_N1 and S_N2 reactions. (10)

OR

- Q10 Suggest the mechanism of Bechmann and Vilsmeier 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.