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Roll No. Of Questions : 11	Total No. of Pages : 02
M.Sc.(Chemistry) (2018 Batch) (Sem1) REACTIVE INTERMEDIATES-I	
Subject Code : CHL-402-18	
M.Code : 75114	
Time:3 Hrs.	Max. Marks:70
INSTRUCTIONS TO CANDIDATES :	
<ol> <li>SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.</li> </ol>	
<ol><li>SECTION-B contains EIGHT questions carrying FIVE marks each and students have to attempt any SIX questions.</li></ol>	
<ol> <li>SECTION-C will comprise of two compulsory questions each question carries TEN marks.</li> </ol>	

### **SECTION-A**

### Q1 Answer briefly :

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



- 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<sub>3</sub> with
  - (i)  $C_6H_6$  and
  - (ii) CH<sub>3</sub>OC<sub>6</sub>H<sub>5</sub>
- 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?

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### **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.
  - (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.

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