(Pages : 4) **H – 3683**

Reg. No. : .....

Name : .....

First Semester M.Sc. Degree Examination, December 2019

Chemistry/Polymer Chemistry

CH/CL/CM/CA/PC 212 : ORGANIC CHEMISTRY – I

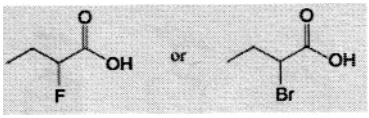
(Common for Chemistry (2016 Admission Onwards) and Polymer Chemistry (2018 Admission Onwards)

Time : 3 Hours Max. Marks : 75

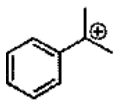
SECTION – A

Answer **any two** among (a), (b) and (c) from each question. Each sub-questions carries **2** marks.

1. (a) Which compound would be more acidic and why?



(b) Arrange in the increasing order of the stability of the following carbocations. Justify your answer.

(i) 

(ii) 

(iii) 

(iv) 

(c) Write a reaction in which carbanion is formed as intermediate.

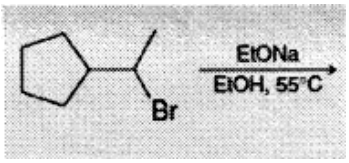
P.T.O.

2. (a) 1-propyl radical intermediate usually in a chemical reaction rearrangement to 2-propyl radical, whereas 1-propenyl radical do not. Explain the reason.

(b) How can the nitrene Ph-N: and Ph-CO-N: be formed as intermediates. Write the examples of the subsequent reaction.

(c) Solvolysis by acetate of 2-phenyl ethanol is much faster than that of n-propanol. Account for the observation.

3. (a) Predict the major product in the following reaction.



(b) Discuss E_1CB mechanism by citing suitable example.

(c) Explain the substitution nucleophilic internal.

4. (a) Give an example each for nitrogen and sulfur based chiral center.

(b) Discuss the Rosenmund reduction.

(c) What is helicity means?

5. (a) Give the structure of Ibuprofen and which stereoisomer is biologically active.

(b) Discuss the conformation of decalin.

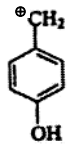
(c) Give two synthetic uses of DDQ.

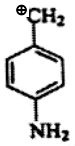
(10 × 2 = 20 Marks)

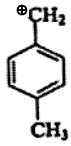
SECTION – B

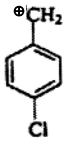
Answer either (a) or (b) of each question, and Each question carries **5** marks.

6. (a) Arrange the following intermediate into decreasing order of stability. Justify your answer.

(i) 

(ii) 

(iii) 

(iv) 

(b) Explain the generation and reactions of carbene intermediates.

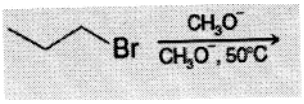
7. (a) Write a short note on atropisomerism and its naming.

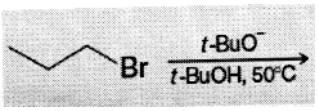
(b) What is Cotton effect?

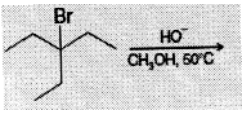
8. (a) Write a brief note on Wittig reaction and give its two applications.

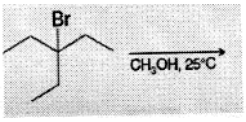
(b) Discuss S_E2 mechanism of electrophilic aliphatic substitution.

9. (a) Predict the major product and indicate the type of mechanism it to be followed.

(i) 

(ii) 

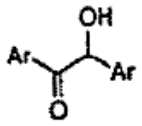
(iii) 

(iv) 

(b) Write the synthetic steps involved in the preparation of *m*-bromonitrobenzene and *p*-bromonitrobenzene starting from Benzene.

10. (a) How conformation influence the reaction rate and the product structure in the E2 elimination of 4-*t*-butyl cyclohexyl tosylate?

(b) How would you employ base catalyzed reaction for the preparation of the following compound and write the mechanism of the reaction.



(5 × 5 = 25 Marks)

SECTION – C

Answer **any three** questions. Each question carries **10** marks.

11. Explain the effect of (a) solvent, (b) nature of attacking Nucleophile, (c) Leaving group and (d) substrate in aliphatic nucleophilic substituition.

12. Describe in detail the stereochemistry of non-carboy chiral centres.

13. Discuss in detail on uses Boron based metal hydride reagents in Organic synthesis.

14. Give an account with detailed mechanism of cis and trans hydroxylation of cycloalkene.

15. Write the mechanism of the following reaction, (a) Darzen, (b) Reformatsky (c) Knoevenagel and (d) Cannizzaro.

(3 × 10 = 30 Marks)

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