Reg. No. : ....

Name : ....

K20U 1812

III Semester B.Sc. Degree CBCSS (OBE) – Regular Examination, November 2020
(2019 Admission Only)
CORE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
3B03CHE/PCH : Organic Chemistry – I

Time : 3 Hours

Total Marks : 40

Instruction : Answer the questions in English only.

SECTION – A

Very short answer type – **Each** carries **1** mark. Answer **all 4** questions.

1. Among methyl, ethyl, isopropyl and tert-butyl cations, which is the most stable ?

2. What is the general term used to describe a synthetic process in which an optically active chiral compound is produced from an achiral compound ?

3. Which is the least stable conformer of ethane ?

4. What is the product formed when N-bromosuccinimide is heated with propene ?

$(4 \times 1 = 4)$

SECTION – B

Short answer type - **Each** carries **2** marks – Answer **7** questions out of 10.

5. Why is trimethylamine less basic than dimethylamine ?

6. What are electrophiles ? Give two examples.

7. Distinguish between a singlet carbene and a triplet carbene.

8. What is tropylium ion ? Explain its aromaticity on the basis of Hückel's rule.

9. Differentiate between asymmetric and dissymmetric molecules.

10. Draw the Fischer projections of the optical isomers of 2-bromobutane.

11. Give any two postulates of Baeyer's strain theory.

12. What are conducting polymers ? Give two examples.

13. How is Nylon-66 prepared ?

14. Give the structure of methyl orange.   (7×2=14)

SECTION – C

Short essay/problem type - **Each** carries 3 marks. Answer **4** questions out of 6.

15. Explain the term hyperconjugation and its significance with illustrative examples.

16. What are annulenes ? Give the names and structures of two annulenes that are aromatic.

17. Discuss the optical isomerism of lactic acid.

18. Give the preparation and applications of the following :
    a) Phenol-formaldehyde resin   b) Buna-S.

19. Explain the term chromophore and auxochrome with suitable examples.

20. What is Wittig reagent ? Give the preparation and synthetic application of Wittig reagent.   (4×3=12)

SECTION – D

Long essay type – **Each** carries 5 marks – Answer **2** questions out of 4.

21. Discuss the generation, structure and stability of carbocations.

22. a) Explain the mechanism of Sulphonation of benzene.

    b) Explain the term ortho-para ratio.

23. a) What is optical activity ? Which types of organic molecules exhibit optical isomerism ?

    b) Draw different conformations of cyclohexane. Which is more stable ? Why ?

24. a) Explain Reformatsky reaction.

    b) How are the following obtained with the help of ethyl acetoacetate :
       i) Crotonic acid
       ii) Glutaric acid
       iii) 3-methylpentan-2-one.   (2×5=10)