

19U410S

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Name:

Reg. No.....

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCBCSS-UG)

CC15U CHE4 B04 - ORGANIC CHEMISTRY I

(Chemistry - Core Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

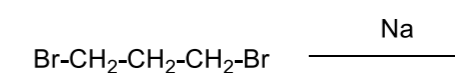
Time: Three Hours

Maximum: 80 Marks

Section A (One word)

Answer *all* questions. Each question carries 1 mark.

1. The structural formula of but-2-en-1-ol is -----
2. The most stable conformation of ethylene glycol is its ----- form
3. Isomers formed by rotation about single bonds are called -----
4. Homolytic cleavage of C-C bond generate -----
5. Primary alkyl halides undergo elimination reaction by the ----- mechanism
6. Write the product formed in the following reaction is -----



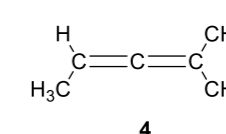
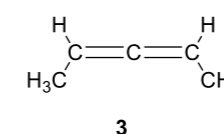
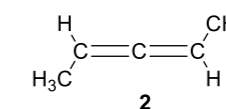
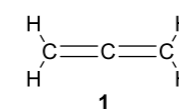
7. The catalyst used in Friedal-Craft's alkylation is -----
8. The -CHO group has ----- directing influence in aromatic electrophilic substitution reactions.
9. Give an example for an anti-aromatic compound.
10. What is Lindlar's catalyst?

(10 × 1 = 10 Marks)

Section B (Short answer)

Answer any *ten* questions. Each question carries 2 marks.

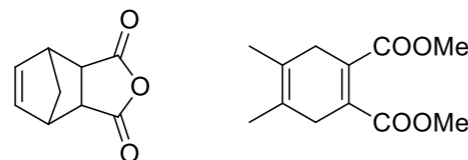
11. Explain position isomerism with example
12. Discuss the basicity of pyrrole and pyridine.
13. Which of the following structures will exhibit optical isomerism and why?



(1)

Turn Over

14. What kind of mesomeric effect does $-\text{CN}$ group exhibit? Explain with mesomeric structures.
 15. What are carbenes? Explain with example.
 16. Benzene do not decolorize bromine water though it has three double bonds. Why?
 17. State Markovnikov's rule and anti Markonikov's rule with one example.
 18. Suggest the starting materials to prepare the following compounds by Diels-Alder reaction.



19. Explain ozonolysis reaction of alkene and suggest the alkene which can be used to prepare acetone by this method
 20. What is meant by sulphonation? What is the major product obtained when naphthalene undergoes sulphonation at 60-80 °C and why?
 21. What does the term ortho-para directing group mean in connection with aromatic electrophilic substitution reactions? Explain with examples.
 22. What is the major product obtained when 1-chloro propane is treated with benzene in the presence of AlCl_3 ?

(10 × 2 = 20 Marks)

Section C (Paragraph)Answer any *five* questions. Each question carries 6 marks.

23. Draw and explain the potential energy diagram of interconversion of cyclohexane conformers.
 24. Explain Baeyer's strain theory and its merits and demerits.
 25. Discuss the hybridisation, structure and stability of carbocations
 26. Discuss the reactions of free radicals
 27. State and illustrate the Zaitsev's rule
 28. Explain cis and trans hydroxylation of alkene with mechanism
 29. Explain with equations the Haworth's synthesis of naphthalene
 30. What is Huckel's rule? How is it used to explain the stability of cyclopropenyl cation, cyclopentadienyl anion and cycloheptatrienyl cation?

(5 × 6 = 30 Marks)

Section D (Essay)Answer any *two* questions. Each question carries 10 marks

31. Discuss and illustrate the significance of the various electron displacement effect in organic molecules

32. (a) Discuss with suitable example the E, Z system of nomenclature of geometrical isomers.
 (b) Briefly discuss the optical isomerism in allenes and biphenyls.
 33. What are aromatic electrophilic substitution reactions? Give two examples for the aromatic electrophilic substitution of benzene and explain its mechanism.
 34. Explain the following.
 a) Racemization
 b) Resolution
 c) Enantiomeric excess
 d) Asymmetric synthesis

(2 × 10 = 20 Marks)
