

C 2171

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Name.....

Reg. No.....

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION  
APRIL 2021

Chemistry

CHE 4B 04—ORGANIC CHEMISTRY—I

Time : Three Hours

Maximum : 80 Marks

Section A (One Word)

Answer all questions.

Each question carries 1 mark.

1. A tertiary carbocation is \_\_\_\_\_ stable than primary carbocation.
2. 1-butene and 2-butene are \_\_\_\_\_ isomers.
3. Represent the functional group of ether.
4. Baeyer's reagent is \_\_\_\_\_.
5. Give one example for non-benzenoid aromatic compounds ?
6. Draw the two flipped cyclohexane structure in chair form.
7. Which isomer is having zero dipole moment ? Cis -2-butene or trans-2-butene ?
8. Draw the stable conformation of ethylene glycol.
9. Hybridization of carbene (triplet) intermediate \_\_\_\_\_.
10. 1-Butyne is \_\_\_\_\_ acidic than 2-Butyne.

(10 × 1 = 10 marks)

Section B (Short Answers)

Answer any ten questions.

Each question carries 2 marks.

11. Define specific rotation ?
12. Represent tartaric acid in Fischer projection.
13. "Ortho-nitro phenol is more acidic than meta-nitro phenol". Justify your answer ?
14. Discuss ring flipping with suitable examples ?

Turn over

15. Explain Anti-Markownikov addition reaction.
16. Arrange the compounds in order of decreasing reactivity toward aromatic electrophilic substitution : Benzene, phenol, toluene, nitrobenzene.
17. Explain Keto-enol tautomerism with proper examples.
18. What are Anti-aromatic compounds ? Give examples.
19. Arrange the carbocation given in their increasing stability order  $\text{CH}_3^+$ ,  $\text{C}_2\text{H}_5^+$ ,  $(\text{CH}_3)_3\text{C}^+$ . Justify.
20. Write the products obtained on sulphonation of naphthalene at different temperatures.
21. Write the products when 2-Butyne reacts with  $\text{H}_2/\text{Lindlar}$  catalyst.
22. Explain the term enantiomeric excess.

(10 × 2 = 20 marks)

### Section C

*Answer any five questions.*

*Each question carries 6 marks.*

23. Give the mechanism of halogenation of benzene.
24. What are Carbanions ? Discuss the stability of carbanions.
25. Explain the mechanism of dehydration of alcohols.
26. Discuss the conformations of n-butane with proper energy profile diagram.
27. Define Hyperconjugation. How it can be used to compare stability of 1-butene and 2-butene ?
28. Discuss the mechanism of addition of water into alkene with proper examples.
29. State Huckel's ( $4n + 2$ ) rule. Explain the aromatic character of indole and quinoline.
30. Write a short note on 1, 4 addition of 1, 3-butadiene and Diels Alder reaction.

(5 × 6 = 30 marks)

### Section D

*Answer any two questions.*

*Each question carries 10 marks.*

31. a) Write a brief note on :
  - 1) Freund reaction ; and 2) Ozonolysis reaction.
- b) Discuss Haworth synthesis of naphthalene ?

(6 + 4 = 10 marks)

32. a) Discuss the definition, structure, hybridization of carbocation intermediate.  
b) Discuss the stereochemistry of addition of halogens into alkene with proper examples.  
(6 + 4 = 10 marks)
33. a) Write a detailed comparison note on basicity of pyrrole and pyridine.  
b) Discuss in detail about ring activating and deactivating group with proper examples.  
(5 + 5 = 10 marks)
34. a) Define mesomeric effect? Give examples for + M and - M groups and also compare the basicity of aniline and p-nitroaniline.  
b) Discuss the structure and stability of benzene based on M O concepts?  
(5 + 5 = 10 marks)  
[ 2 x 10 = 20 marks]