

C 61218

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Name.....

Reg. No.....

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL/MAY 2018

(CUCBCSS—UG)

Chemistry

CHE 4B 04—ORGANIC CHEMISTRY—I

Time : Three Hours

Maximum : 80 Marks

Section A

Answer all questions.

Each question carries 1 mark.

1. Which one is more basic - pyridine or pyrrole ?
2. Dimethyl ether and ethanol are ——— isomers.
3. Draw the Newman projection of completely staggered butane.
4. What is Lindlar's catalyst ?
5. The substitution reactions in aromatic compounds are generally ———.
6. Give any *two* examples for aromatic ring deactivating groups.
7. The strain due to distortion of valency angle in simple aliphatic compounds is called ———.
8. Give the structure of R-glyceraldehyde.
9. A type of optical isomerism found in compounds lacking asymmetric carbons is ———.
10. Give an example for antiaromatic compound.

(10 × 1 = 10 marks)

Section B

Answer any ten questions.

Each question carries 2 marks.

11. Which one is more acidic - acetic acid or trichloroacetic acid ? Why ?
12. Explain the stability of tropylium cation.
13. Explain why unsaturated compounds decolorize bromine water.
14. What are nitrenes ? Give an example.
15. Which conformation of cyclohexane is more stable ? Why ?
16. Give the major product of dehydrohalogenation of 2-bromobutane. Explain the reaction.
17. What is Wurtz reaction ?

Turn over

18. What is Friedel-Craft's alkylation ?
19. What are the limitations of Baeyer's strain theory ?
20. Explain the Kharasch effect.
21. Explain the aromaticity in pyrrole.
22. Benzene does not decolorize bromine water though it has three double bonds. Why ?

(10 × 2 = 20 marks)

Section C

Answer any five questions.

Each question carries 6 marks.

23. Distinguish between relative configuration and absolute configuration with examples.
24. Differentiate enantiomers and diastereomers with suitable example.
25. Write any two applications each of inductive effect and mesomeric effect.
26. Discuss the conformational analysis of ethane with energy diagrams.
27. Compare the stability of methyl carbocations and ethyl carbocation by hyperconjugation.
28. Explain + E and – E effects with suitable examples.
29. With the help of a suitable example, explain the influence of steric effect of reactivity.
30. Explain cis and trans hydroxylation of alkenes with mechanism.

(5 × 6 = 30 marks)

Section D

Answer any two questions.

Each question carries 10 marks.

31. Discuss with suitable examples, the structure, formation, stability and important reactions carbocations and carbanions.
32. (i) Discuss briefly the structure and stability of benzene.
(ii) How will you calculate the resonance energy of benzene from heat of hydrogenation ?
33. Give any three methods of preparation and discuss briefly addition and oxidation reactions of alkynes.
34. Explain the following :
 - (a) Racemization.
 - (b) Resolution.
 - (c) Enantiomeric excess.
 - (d) Asymmetric synthesis.

(2 × 10 = 20 marks)