

**16U410**

(Pages: 2)

Name: .....

Reg. No. ....

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2019**

(Regular/Supplementary/Improvement)

(CUCBCSS-UG)

**CC15U CHE4 B04 - ORGANIC CHEMISTRY I**

Chemistry - Core Course

(2015 Admission onwards)

Time: Three Hours

Maximum: 80 Marks

**SECTION A**

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

1. The functional isomer of ethanol is .....
2. Conformational isomerism arises because of ..... rotation about a single bond.
3. Among Maleic and Fumaric acids, which has a higher melting point?
4. Among Chloroacetic acid and Acetic acid, which one is more acidic?
5. Free radicals are formed by ..... cleavage of bonds.
6. Primary alkyl halides undergo elimination by the ..... Mechanism.
7. Baeyer's reagent is dilute alkaline .....
8. Attacking electrophile in an aromatic nitration reaction is the ..... ion.
9. What is the product obtained when o-xylene undergoes oxidation with alkaline  $\text{KMnO}_4$ ?
10. Among pyrrole, pyridine and quinoline, the one that loses aromaticity upon protonation is .....

**(10 x 1 = 10 Marks)**

**SECTION B**

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

11. What are anti aromatic compounds? Give one example.
12. What is Etard reaction? Give one example.
13. Name any two polycyclic arenes that are carcinogens.
14. What are the two possible addition products obtained when pent-2-ene reacts with  $\text{HBr}$ ?
15. What is Diels- alder reaction? Illustrate with example?
16. How does allyl cation get stabilized?
17. Distinguish between singlet and triplet carbenes.
18. Define hyperconjugation? Give one example.
19. Distinguish between the terms enantiomers and diastereomers.

20. How can maleic acid be converted to fumaric acid?
21. What is meant by tautomerism? Give one example?
22. Draw the chair conformations of methyl cyclohexane.

**(10 x 2 = 20 Marks)**

### SECTION C

Answer any *five* questions. Each question carries 6 marks.

23. Discuss the relative stability of conformers of butane.
24. Discuss the methods for the resolution of racemic mixtures.
25. Explain the role of steric effect in determining the order of basicity of methyl amine, dimethyl amine and trimethyl amine.
26. Explain a method for the conversion of propene to propan-1-ol.
27. Explain what is meant by ozonolysis? Explain its significance in structural elucidation.
28. Explain the resonance concept of the structure of benzene and its stability.
29. Explain according to Huckel's rule, which of the following are aromatic.  
(1) Tropylium ion                      (2) Indole                      (3) Pyridine.
30. Discuss the mechanism of dehydration of alcohol.

**(5 x 6 = 30 Marks)**

### SECTION D

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

31. (a) Discuss the optical isomerism exhibited by tartaric acid.  
(b) Taking suitable example, illustrate different rules followed to assign R and S notation to optical isomers.
32. What are aromatic electrophilic substitution reactions? Explain with mechanism, halogenation and nitration of benzene.
33. What are Carbocations? Explain the structure, types, stability and reactions of carbocations.
34. Explain the following reactions.
  - (1) Oxymercuration of Acetylene.
  - (2) Reduction of But-2-yne with Na/liq.NH<sub>3</sub>.
  - (3) Oxidation of Propyne with cold dilute KMnO<sub>4</sub>.
  - (4) Reaction of But-2-yne with hot alkaline KMnO<sub>4</sub>.
  - (5) Reduction of Propyne with Lindlar's catalyst.

**(2 x 10 = 20 Marks)**

\*\*\*\*\*