16U410 (Pages: 2) Name: …….

Reg. No……...……

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2018

(Regular/Supplementary/Improvement)

(CUCBCSS - UG)

CC15U CHE4 B04 - ORGANIC CHEMISTRY I

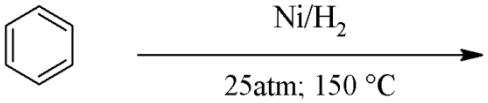
(Chemistry - Core Course)

(2015 Admission onwards)

Time: Three Hours Maximum: 80 Marks

Section A

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

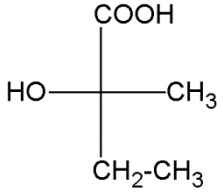
1. Carbon atom in acetylene is in ---------- hybridized state.
2. Write the structural formula of 1,5dinitronaphthalene.
3. In ethane the difference in energy between the eclipsed and staggered conformations is due to ---------- strain.
4. Sulphonation of naphthalene is an example of ---------- substitution reaction.
5. Diastereomers are stereo isomers which are not ---------- each other.
6. The structure of carbocation has a ---------- geometry.
7. Give the IUPAC name of the compound $CH_3CH_2NHCH_3$
8. The configuration of L-erythrose can be drawn as ----------
9. The tertiary butyl anion is ---------- stable than isopropyl anion.
10. 

(10 x 1 = 10 Marks)

Section B

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

11. State and explain Huckel's rule of aromaticity.
12. Name the major product formed in the dehydrobromination of 2-bromobutane.
13. Give the reaction in which acetylene is converted into disodium acetylide.
14. What is meant by heterolytic bond fission?
15. Explain the term chirality with suitable example.
16. Draw the most stable conformation of methyl cyclohexane.
17. What is hyper conjugation?
18. Explain keto-enoltautomerism.
19. Discuss cis-trans isomerism with an example.
20. Assign the absolute configuration (R or S) of the molecule



21. Nitro group is a strongly deactivating group; illustrate with a suitable example.

22 $CH_3\text{-}CH_2\text{-}CH_2\text{-}CH_3 \xrightarrow[200\ ^\circ C,\ 35atm]{AlCl_3,\ HCl}$

(10 x 2 = 20 Marks)

Section C

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

23. Wurtz reaction is a convenient method for the preparation of symmetrical alkanes, comment. Mention two limitations of wurtz reaction.
24. What is saytzeff's rule. Illustrate with a suitable example.
25. Comment on oxymercuration of alkenes and alkynes.
26. What do you know about Etard's reaction. Explain
27. What are annulenes? Do they possess aromaticity? Justify.
28. Differentiate conformation from configuration. Draw fully eclipsed and fully staggered newman projections of the conformations of butane.
29. Describe, biochemical and chemical methods for the resolution ofrecemic mixtures.
30. Arrange the following acids in the increasing order of their acidities; acetic acid, chloroacetic acid, dichloroacetic acid and trichloroacetic acid. Justify your answer.

(5 x 6 = 30 Marks)

Section D

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

31. (i) Discuss the Haworth's synthesis of naphthalene.

    (ii)Explain Friedel-crafts acylationreaction with mechanism.
32. Give the products of reactions of the following with the help of chemical equations:
    a. Buta-1,3-diene with propenal at 100^oC.
    b. Propylene with HBr in the presence of benzoylperoxide.
    c. Ethyne with cold dilute alkaline $KMnO_4$ solution.
    d. Heptane with Cr_2O_3 under high temperature and pressure.
33. Discuss the structure, hybridization, and relative stabilities of different types of carbanions.
34. Write notes on : (i) Optical isomerism in tartaric acid. (ii) Asymmetric synthesis.

(2 x 10 = 20 Marks)

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