Reg. No…….. Name…… **19U319**

B. Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2019

SEMESTER **3: B. Sc. CHEMISTRY (CORE COURSE)**

COURSE: **15U3CRCHE3, ORGANIC CHEMISTRY - I**

(For Regular - 2018 Admission and Supplementary / Improvement 2017, 2016, 2015 Admissions)

Time: Three Hours Max Marks: 60

SECTION A

(Answer ***all*** the questions. Each question carries 1 mark)

1. What are cycloaddition reactions?
2. Give the order of preference for naming organic compounds for the following: Double bond, Functional group, Triple bond, Substituent.
3. Explain Diastereomers.
4. Define resonance energy.
5. What happens when naphthalene is treated with chlorine in boiling CCl_4?
6. Explain why $-NH_2$ group on benzene ring is activating and ortho & para directing.
7. What is Walden inversion?
8. Between bromoacetic acid and chloroacetic acid, which is stronger and why?

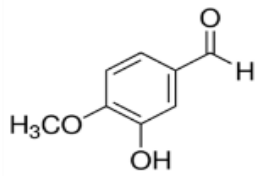
(1 x 8 = 8)

SECTION B

(Answer any ***six*** questions. Each question carries 2 marks)

9. What are condensation polymers? How are they formed? Give examples.
10. State Saytzeff's rule and give the major product when 2-chlorobutane is heated with alc.KOH.
11. Explain sigmatropic rearrangements.
12. Give the IUPAC name of the following :

a) CH_3-CH(Cl)-CH(Br)-CH_2-CH(NO_2)-CH_3 b)



13. Give the structural formulae for the following:

a) 3-Ethyl-4-methylpent-2-en-1-al b) 2-Methoxypropan-1-al

14. Define Claisen rearrangement. Explain the mechanism involved.
15. Discuss the orbital structure of benzene.
16. State Huckel's rule and explain the stability of cyclopentadienyl anion. (2 x 6 = 12)

SECTION C

(Answer any ***four*** questions. Each question carries 5 marks)

17. Discuss the conformation of ethane and their relative stabillities.
18. Discuss the mechanism of Friedel Crafts alkylation and point out its limitations.
19. Explain the greater reactivity of α-position compared to β-position towards electrophilic substitution in naphthalene.
20. Write a short note on mesomeric effect.
21. Discuss resonance with help of examples.
22. Explain hyperconjugation and its significance in explaining the physical & chemical properties of organic molecules (5 x 4 = 20)

SECTION D

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

23. a) What are free radicals? How are they formed? Discuss the geometry & relative stabilities.
    b) Discuss polymerisation reactions.
24. Discuss the mechanism, stereochemistry and kinetics of SN_1 & SN_2 reaction for the hydrolysis of alkyl halides.
25. a) Give the mechanism for the nitration of naphthalene.
    b) Explain the ortho & para directing nature of methyl group in benzene.
26. a) What do the symbols E & Z stand for? Illustrate briefly the E & Z system of naming a pair of geometrical isomers. What are the advantages of E, Z system over the conventional cis-trans system?
    b) What is racemization? Explain how racemization can be brought about in optically active compounds.

(10 x 2 = 20)

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