20U319S (Pages: 2) Name: …….……

Reg. No……

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS-UG)

CC15U CHE3 C03 - ORGANIC CHEMISTRY

(Chemistry - Complementary Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours Maximum: 64 Marks

Section A (One word)

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

1. Optical isomers which are not mirror images are called ----------
2. The electrophile in Freidel craft's acylation is ----------
3. Geometrical isomerism arises due to restricted rotation about ---------- bonds.
4. Maleic acid and fumaric acid are ---------- isomers
5. Draw the structure of coniine.
6. NO_2 group has ---------- directing influence in aromatic electrophilic substitution.
7. Naphthalene is a bicyclic aromatic compound having a delocalized set of ---------- π electrons.
8. Among Cl, NH_2, COOH groups, the one that is a strongly activating group is the ---------- group.
9. The α and β forms of glucose are called ----------
10. Cellulose is a polymer of ----------

(10 × 1 = 10 Marks)

Section B (Short answer)

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

11. What are epimers?
12. Define isoelectric point.
13. Draw the structure of adenine.
14. How can benzene be converted to toluene?
15. What are deactivating groups? Give two examples.
16. State and explain isoprene rule.
17. Draw the conformations of cyclohexane. Which is more stable and justify your answer?
18. What is racemization?
19. What is mutarotation? Give example.
20. What is meant by vulcanization? What are its advantages?

(7 × 2 = 14 Marks)

Section C (Paragraph)

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

21. Discuss the optical isomerism in tartaric acid.
22. Explain (a) Structure of natural rubber (b) Vulcanization and its advantages.
23. Discuss the mechanism of nitration and sulphonation in benzene.
24. Explain the structure of DNA.
25. Discuss the structure of sucrose.
26. Explain mutarotation.

(4 × 5 = 20 Marks)

Section D (Essay)

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

27. Explain the term aromaticity. State Huckel's rule and discuss its significance on the basis of MO theory. Illustrate its applicability to cyclic compounds taking various examples.
28. Discuss primary, secondary and tertiary structure of proteins.
29. (a) What is optical activity?
    (b) Discuss optical isomerism of lactic acid.
    (c) What is meant by resolution of racemic mixture? Give two methods for resolution.
30. Discuss in detail the double-helical structure of DNA

(2 × 10 = 20 Marks)

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