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T – 1651

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2024

First Degree Programme under CBCSS

Chemistry

Core Course XI

CH 1642 : ORGANIC CHEMISTRY III

(2020 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. Draw the structure of pyrimidine.
2. What is the medicinal use of ibuprofen?
3. What is meant by isoelectric point?
4. Give one example for heterocyclic amino acids.
5. Define saponification value.
6. What is PDI in polymers? Mention its significance.
7. Give one example for biodegradable polymer.
8. What is hyperchromic shift?

P.T.O.

9. C-12 is NMR active or not? Give reason.
10. What is the finger print region in IR spectrum?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Give an account on the basicity of pyridine and pyrrole.
12. Give the IUPAC name of Furan and quinoline.
13. What is replication of DNA?
14. Give the structure and uses of citral.
15. What are essential and nonessential amino acids?
16. Give the general method of extraction of alkaloids.
17. What are epoxy resins? Mention its uses.
18. What is TMS? Why it is selected as a reference compound in ¹H-NMR spectroscopy?
19. Give the method of preparation and uses of nitrile rubber.
20. How will you distinguish inter and intra molecular hydrogen bonds by using IR spectroscopy?
21. Identify the types of electronic transitions in CH₃CHO.
22. State and explain Beer-Lamberts law.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks.

23. Explain the terms Transcription and Translation.
24. Write short note on synthesis and mode of action of sulpha drugs.

25. Describe the structural elucidation of piperine.
26. Discuss any two aromatic substitution reactions of quinoline.
27. Write short note on various additives to the polymers.
28. Differentiate addition and condensation polymerization reactions with examples.
29. Discuss the free radical mechanism of addition polymerization.
30. Explain McLafferty rearrangement and isotopic effect in mass spectroscopy.
31. A compound with molecular formula C₈H₈O shows the following absorptions:

- (a) IR Spectrum: 3050, 2950, 1700, 1620, 1550, 690 cm⁻¹.
(b) PMR spectrum: 8 7-8ppm (multiplet, 5H), 2.5ppm (singlet, 3H).

Identify the structure of the compound.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks.

32. Discuss any three methods of synthesis of amino acids. 7
33. (a) Discuss the process vulcanization and its advantages. 7
(b) Describe the mechanism of coordination polymerization. 8
34. (a) Write short note on spin-spin coupling and coupling constant in NMR spectroscopy. 7
(b) Discuss Woodward-Fieser rules to determine the $\lambda_{\max}$ by taking an example. 8
35. Write short on the following
(a) Hantzsch pyridine synthesis
(b) Fischer-Indole synthesis
(c) Skraup quinoline synthesis

(2 × 15 = 30 Marks)