



Nagarjuna Degree College
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Reg. No.

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V Semester B.Sc. Degree Examination, April - 2022

CHEMISTRY

Organic Chemistry

(CBCS New Scheme (F+R) 2020-21 onwards)

Paper : V

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

- i. The question paper has two parts. Answer both the parts.
- ii. Draw diagrams and chemical equations wherever necessary.

PART - A

Answer any **EIGHT** of the following questions. Each question carries **two** marks. (8 \times 2=16)

1. What is meant by stereoisomerism?
2. Meso tartaric acid is optically inactive why?
3. Give the preparation of aniline from nitrobenzene.
4. How is pyrrole prepared from acetylene?
5. State isoprene rule.
6. How do you show that Zingiberene contain three carbon - carbon double bonds.
7. Mention any two uses of ephedrine.
8. Explain hypsochromic shift with an example.
9. What is meant by chemical shift in NMR spectroscopy?
10. What are mordant dyes? Give an example.
11. What are tranquilisers? Give an example.
12. Give the principles of Green chemistry.

[P.T.O.]



PART - B

Answer any NINE of the following questions. Each question carries six marks. (9×6=54)

13. a) Explain optical isomerism in 2,3 - dichlorobutane.
b) Write syn and anti configurations of benzaldoxime. (4+2)
14. a) What is resolution? Explain the chemical method of resolution of a racemic mixture.
b) Write the structures of E and Z configurations of $CH_3 - C = C - Br$. (4+2)
$$\begin{array}{c} | \quad | \\ Cl \quad H \end{array}$$
15. a) Write the conformations of cis and trans isomers of 1,3 - dimethylcyclohexane. Which form is more stable and why?
b) Explain the formation of a quaternary ammonium salt with an example. (4+2)
16. a) What is Hinsberg reagent? How is it used to distinguish primary, secondary and tertiary amines?
b) How is benzenediazonium chloride converted to benzonitrile? (4+2)
17. a) Represent the orbital structure of pyridine and explain the aromaticity of pyridine based in Huckel's rule.
b) Explain nitration of indole. (4+2)
18. a) Explain the general mechanism of electrophile substitution reaction of furan.
b) Explain the relative basic strengths of pyridine and piperidine. (4+2)
19. a) How is fructose converted to glucose?
b) Write the Haworth structure of maltose. (4+2)
20. a) Explain with reactions to locate the position of carbon - carbon double bonds in citral.
b) Write the structure of camphor. (4+2)
21. a) How do you show that
i) Nicotine contains pyridine ring.
ii) Nitrogen atoms in nicotine are tertiary.
b) Mention any two general characteristics of alkaloids. (4+2)



22. a) Describe the different types of allowed transitions in UV spectroscopy taking acetone as an example.
- b) How is IR spectrum used to distinguish between free -OH group and hydrogen bonded -OH group.
- c) Why tetramethyl silane is used as a reference compound in NMR spectroscopy. (2+2+2)
23. a) Explain
- i. Spin - Spin splitting.
- ii. Nuclear shielding in NMR spectroscopy.
- b) Mention the number of signals and multiplicity of the signals in the NMR spectrum of $\text{CH}_3\text{CH}_2\text{Cl}$. (4+2)
24. a) Give the synthesis of congo red.
- b) What are Vat dyes? Give an example. (4+2)
25. a) Describe the synthesis of paracetamol from phenol.
- b) Mention the uses of chloramphenicol. (4+2)
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