



K24U 3413

Reg. No. :

Name :

III Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/
Improvement) Examination, November 2024
(2019 to 2023 Admissions)

COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER
CHEMISTRY

3C03CHE/PCH(BS) : Chemistry (For Biological Science)

Time : 3 Hours

Max. Marks : 32

*Instruction : Answer the question in **English** only.*

SECTION – A

Very short answer type. **Each** question carries **1** mark. Answer **all 5** questions.

1. How many coordination sites are there in ethylene diamine ?
2. Arrange the following groups in the order of decreasing $-I$ effect.
F, Cl, Br, I, H, CN, COOH
3. Optical isomerism is based on the behavior of molecules towards
4. How is internal energy change in a process is related to heat and work.
5. The monomer unit of natural rubber is (5×1=5)

SECTION – B

Short answer type. **Each** question carries **2** marks. Answer **any 4** questions out of 6.

6. What are the typical conditions for Friedel-Crafts reactions ?
7. Using a suitable example, explain how geometrical isomerism can be distinguished ?
8. Distinguish between thermoplastics and thermosetting plastics.
9. Ethanol boils at 78.4°C and the enthalpy of vaporization is 40.8 kJ/mol at 373 K . Calculate the entropy change for the process.

P.T.O.



10. What are the important characteristics of a first order reaction.
11. What are the factors affecting the rate of a reaction ? (4×2=8)

SECTION – C

Short essay type. **Each** question carries **3** marks. Answer **any 3** questions out of 5.

12. What are unidentate, bidentate and polydentate ligands ? Explain with examples.
13. Distinguish between E_1 and E_2 reactions.
14. Draw the Newman projections of ethane with dihedral angles 0° , 60° , and 180° .
15. "Entropy of the universe is increasing." Account for the statement.
16. What are biodegradable plastics ? Name three and discuss their applications. (3×3=9)

SECTION – D

Long essay type. **Each** question carries **5** marks. Answer **any 2** questions out of 4.

17. a) Write a short note on effective atomic number and its application.
b) Write the important postulates of Valence Bond Theory as applied to complexes. (2+3)
18. a) With suitable example, explain Walden inversion.
b) Hyperconjugation and inductive effect are two very important factors for determining the stability of reaction intermediates. Justify. (2+3)
19. a) Define enantiomers. Explain the optical isomerism in tartaric acid.
b) Explain the free energy criteria for (i) spontaneous process and (ii) a state of equilibrium. (3+2)
20. a) Distinguish between homogeneous and heterogeneous catalysis.
b) Discuss the salient aspects of transition state theory of reaction rates. (2+3)
- (2×5=10)
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