

Reg. No. :

Name :

Third Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/
Improvement) Examination, November 2022
(2019 Admission Onwards)

COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER
CHEMISTRY CORE

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

Time : 3 Hours

Max. Marks : 32

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

SECTION – A

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

1. Give an example for a copolymer.
2. The polarization of a carbon-carbon double bonds takes place in the presence of an attacking reagent is called _____
3. The process in which the pressure remains constant is known as _____
4. The unit of rate constant for second order reaction is _____
5. _____ is an example for a polydentate ligand.

SECTION – B

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

6. How benzene can be converted to toluene ?
7. Explain why chloramine is a weaker base than ammonia whereas chloroacetic acid is stronger acid than acetic acid.
8. State second law of thermodynamics.

P.T.O.



9. What are the factors affecting the stability of metal complexes ?
10. Distinguish between enantiomer and diastereoisomer.
11. Name the co-ordination compounds : $[\text{Pt}(\text{NH}_3)_2\text{Br}_2]$ and $[\text{Zn}(\text{OH})_4]^{2-}$.

SECTION – C

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

12. What is peroxide effect ? Explain with an example.
13. What is the origin of geometrical isomerism ? Give any two methods to distinguish between cis and trans isomers.
14. Explain biodegradable polymers with example.
15. A first order reaction has a specific reaction rate of 0.001 s^{-1} . How long will it take for 10 g of the reactant to reduce to 1.5 g ? Also calculate the half-life of the reaction.
16. At what temperature does the reaction :
 $\text{C}(\text{s}) + \text{H}_2\text{O} \rightarrow \text{CO}(\text{g}) + \text{H}_2(\text{g})$ become spontaneous if enthalpy and entropy change for the reaction is $+131.3 \text{ kJ}$ and $+133.6 \text{ J/K}$ respectively ?

SECTION – D

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

17. a) State the postulates of Werner's theory of Co-ordination complexes.
b) Give any three applications of Co-ordination complexes. (2+3)
18. a) What is a racemic mixture ? Give any methods for the resolution of racemic mixture.
b) Give any two applications of (a) Phenol-formaldehyde resin and (b) Buna S. (3+2)
19. a) Explain the mechanism of $\text{S}_{\text{N}}1$ reaction.
b) What is the criteria for reversible and irreversible process in terms of free energy ? (3+2)
20. a) How does the temperature influence the rate of a reaction ? Explain.
b) Explain the transition state theory of reaction rates. (2+3)