

23U406

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Name :

Reg. No :

FOURTH SEMESTER B.Sc. / M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION,

APRIL 2025

(CBCSS-UG)

(Regular/Supplementary/Improvement)

CC19U CHE4 C04 / CC23 CHE4 IC04 - PHYSICAL AND APPLIED CHEMISTRY

(Chemistry - Complementary Course)

(2019 Admission onwards)

Time: 2 Hours

Maximum: 60 Marks

Credit: 2

Part A (Short answer questions)

Answer **all** questions. Each question carries 2 marks.

1. What are macromolecular colloids
2. Give an example each for (i) a multimolecular colloid, (ii) macromolecular colloid and (iii) an associated colloid.
3. Which nanomaterials are called 1D-nanomaterials.
4. What are green solvents?
5. Comment on the mechanism by which differential migration of sample components is elected in adsorption column chromatography.
6. State the Born-Oppenheimer approximation.
7. How many normal modes of vibration are possible for (a) the water molecule and (b) the CO₂ molecule?
8. What are the starting materials for the preparation of terylene
9. What is dacron? How is it prepared?
10. What are the major sources of pollution by the oxides of nitrogen?
11. What is meant by refining of petroleum?
12. Distinguish between the terms chemical name and generic name as applied to a drug.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer **all** questions. Each question carries 5 marks.

13. Briefly explain (1) an optical property and (1) a kinetic property of colloids.
14. Explain the comparative catalytic efficiencies of nanometals and their bulk forms.

15. Mention the applications of electronic spectroscopy in organic chemistry.
16. How can the two isomers of C_2H_6O be differentiated using NMR spectroscopy
17. Explain how COD determines the quality of a water sample.
18. Discuss the Witt's theory of colour and constitution
19. Explain the role of antioxidants as food additives.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any *one* question. The question carries 10 marks.

20. What is GLC? Explain its principle and how the method is carried out?
21. What is thermal pollution? Explain the causes, consequences and control measures of thermal pollution.

(1 × 10 = 10 Marks)
