

21U406

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Name: .....

Reg.No: .....

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U CHE4 C04 - PHYSICAL AND APPLIED CHEMISTRY**

(Chemistry - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 2

**Part A** (Short answer questions)

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

1. Differentiate between a sol and an emulsion.
2. Which nanomaterials are called 1D-nanomaterials.
3. Should the % atom economy of a synthesis be greater or lower for a synthesis in accordance with green chemistry principles?
4. What are the stationary and mobile phases in partition column chromatography?
5. Arrange the following radiations in the increasing order of energy UV, IR, microwave, visible.
6. What is a chromophore? Give two examples.
7. Sketch the schematic PMR spectrum of dimethyl ether.
8. What is addition polymerization?
9. Pick out the homopolymers from the following: bakelite, dacron, teflon, P.V.C
10. Explain the significance of determining the DO in a water sample.
11. What are antacids? Give an example.
12. Mention the most important characteristic of Pyrex glass and its use.

**(Ceiling: 20 Marks)**

**Part B** (Short essay questions - Paragraph)

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

13. Explain the term electrophoresis as applied to colloidal systems.
14. Explain the term surface to volume ratio and its significance in nanochemistry.
15. What is meant by the fingerprint region and what is its significance in the IR spectral studies of organic compounds?

16. Discuss the dire consequences of the formation of ozone holes.
17. Explain why disposal of plastics is a great environmental problem.
18. Explain the term chromophore and auxochrome with suitable examples.
19. Discuss with examples the role of permitted and non-permitted colours in the current food industry.

**(Ceiling: 30 Marks)**

**Part C (Essay questions)**

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

20. (a) What are emulsifying agents? Explain their role.  
(b) How can a lyophobic sol be coagulated? Explain.  
(c) What is meant by Brownian movement?
21. Discuss the different aspects of column chromatography.

**(1 × 10 = 10 Marks)**

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