

19U406

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Name: .....

Reg.No: .....

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021**

(CBCSS - UG)

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

(Chemistry - Complementary Course)

(2019 Admission - Regular)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 2

**Part A (Short answer questions)**

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

1. Classify the following aqueous sols into lyophilic and lyophobic sols (1) Gold sol (2) Gelatin sol (3)  $\text{Fe}(\text{OH})_3$ .
2. Define a protective colloid.
3. What are nanomaterials?
4. What is meant by surface to volume ratio? Comment on the surface to volume ratio value of nanomaterials.
5. What are the stationary and mobile phases in thin layer chromatography.
6. What are the relationships between the frequency of a radiation and its (a) wavelength and (b) energy ?
7. What is referred to as a fundamental band in the vibrational spectrum of a molecule?
8. Name an addition polymer and give the formula of its monomer unit.
9. What does the term COD mean with respect to the quality of a sample of water?
10. What is meant by thermal pollution?
11. Define the term octane number.
12. Define a drug.

**(Ceiling: 20 Marks)**

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

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

13. Write a note on the role of emulsifying agents with suitable examples.
14. Write a short note on green solvents, highlighting the significance of the term.
15. In what important respects do the paper and thin layer chromatographic techniques differ?
16. Explain the terms bathochromic and hypsochromic shifts with suitable examples
17. What does PGA stand for ? Explain its preparation and significance.
18. What are the adverse effects of acid rain?
19. Explain the role of antioxidants as food additives.

**(Ceiling: 30 Marks)**

**Part C** (Essay questions)

Answer any *one* questions. Each question carries 10 marks.

20. Discuss briefly the principles of NMR spectroscopy, with reference to proton magnetic resonance.
21. (a) Explain the manufacture of cement and discuss its composition.  
(b) Explain the term "setting of cement".

**(1 × 10 = 10 Marks)**

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