21U614 (Pages: 2) Name: .....

Reg.No: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2024

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U CHE6 B12 - ADVANCED AND APPLIED CHEMISTRY

(Chemistry - Core Course)

(2019 Admission onwards)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

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

1. Name the type of colloidal system in each of the following cases (a) dispersion of gold in water (b) Milk (c) Jellies
2. Which among the following is more effective in coagulating the positively charged $Fe(OH)_3$, sol – Cl^- or SO_4^{2-}? Explain your answer.
3. What are the two phases in combinatorial chemistry approach?
4. Explain the importance of combinatorial synthesis
5. What is the general process used to prepare nanofibres?
6. What are quantum nano structures?
7. What is meant by rocket propellents?
8. What are the uses of caustic soda?
9. What are rhodenticides? Give two examples.
10. Write the structural formula of the dye alizarin.
11. Name an adultrant used in chillipowder. How is it identified?
12. Name a natural and an artificial fruit ripening agent.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Discuss one of the size-dependent properties of nanomaterials.
14. Discuss the term atom economy and explain its significance in the green chemistry context.

15. Explain copolymerization and electrochemical polymerization.

16. Write short notes on natural rubber and synthetic rubbers.

17. Distinguish between soft glass and hard glass. Mention their uses.

18. What is cetane number of a fuel? How can we improve the cetane number of a fuel?

19. What are rodenticides? Give an example.

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. (a) Discuss the classification of nanomaterials based on nanoscale dimensionality.
    (b) What is meant by the term surface to volume ratio of materials? Explain its significance in nanochemistry

21. Explain with suitable examples the green synthesis under microwave irradiation and ultrasonication.

(1 × 10 = 10 Marks)

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