23U615 (Pages: 2) Name: .....

Reg.No: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2026

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19UCHE6B12 - 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. How will you distinguish between a true solution and a colloidal solution?
2. What are 0-D nanomaterials?
3. Which would have a higher % atom efficiency: a catalytic reaction or a stoichiometric reaction?
4. Write one application of combinatorial synthesis
5. Give any method to synthesise carbon nanotubes.
6. What are synthetic polymers? Give one example.
7. Give four applications of refractory materials.
8. What is meant by rocket propellents?
9. Write the main constituents and calorific value of diesel oil.
10. Give an example each for a cationic and anionic detergent.
11. How are the dyes classified based on the mode of application to fabrics?
12. What are the constituents of soft drinks?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

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

13. Discuss the applications of nanomaterials in medicine.
14. What are the differences between thermoplastics and thermosetting plastics?
15. How are nanomaterials classified on the basis of their dimensionality?
16. What are the draw backs of raw rubber? Write a note on vulcanization and its advantages.

17. How titanium dioxide is manufactured? Explain the process.

18. Differentiate the following terms (a) pharmacodynamics (b) pharmacokinetics.

19. What are the functions of food additives?

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. (a) What is meant by coagulation of a sol? Explain the most important method by which it can be brought about.

    (b) Explain the following phenomena (i) Precipitation of ferric hydroxide around the cathode when aqueous $Fe(OH)_3$, sol is subjected to the action of an electric field, (ii) Formation of deltas

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

(1 × 10 = 10 Marks)

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