D 140106 **(Pages : 2)** **Name.....**

Reg. No.....

SIXTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2026

Chemistry

CHE 6B 12—ADVANCED AND APPLIED CHEMISTRY

(2020 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer questions up to 20 *marks.*
Each question carries 2 *marks.*

1. What is the significance of flocculation value of colloids ?
2. Nano-material catalysts are more effective than conventional catalysts. Why ?
3. Microwave assisted synthesis can be included within the concept of Green Chemistry. Justify this statement.
4. What is meant by self-assembly in supramolecular chemistry ?
5. What is meant by PES in computational chemistry ?
6. List any *two* applications of computational chemistry.
7. Give two examples of biodegradable polymers. Represent their polymeric structure.
8. Differentiate isotacticity and syndiotacticity using a suitable example.
9. Give the composition of borosilicate glass. What are the advantages of borosilicate glass ?
10. What are antiknock compounds ? Give an example.
11. Represent the structure of DDT and give its IUPAC name.
12. What are Auxochromes ? Give examples.

(Ceiling of marks : 20)

Turn over

Section B (Paragraph)

Answer questions up to 30 *marks.*
Each question carries 5 *marks.*

13. Explain the relevance of surface to volume ratio in deciding the properties of nanoparticles.

14. Briefly explain any five principles of Green Chemistry.

15. Explain the molecular mechanics method employed in computational chemistry.

16. Describe Zeigler Natta polymerisation.

17. Write a note on Travancore Titanium Products Ltd. giving due stress to the chemical aspects of the manufacture involved.

18. Differentiate pharmacokinetics from pharmacodynamics.

19. Write notes on Food colorants and Food preservatives.

(Ceiling of marks: 30)

Section C (Essay)

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

20. (a) What is combinatorial synthesis ? List few of its applications ?

    (b) What is cement chemically ? Detail its manufacturing process.

21. (a) Explain the manufacture of soap. Discuss the cleansing action of soap.

    (b) What are food adulterants ? How is it bad to health ? Give a method to detect any *two* of such food adulterants.

(1 × 10 = 10 marks)