

D6BCH2004

Reg.No.....

Name:

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023
(Regular/Improvement/Supplementary)

CHEMISTRY

GCHE6B12T: ADVANCED AND APPLIED CHEMISTRY

Time: 2 Hours

Maximum Marks: 60

SECTION A: Answer the following questions. Each carries *two* marks.

(Ceiling 20 Marks)

1. How will you explain high activity of nanomaterials compared to micro or macro objects?
2. What is the difference between STM and AFM?
3. List out the applications of nanomaterials in electronics.
4. What do you mean by geometry optimization in computational chemistry?
5. Mention the advantages and disadvantages of ab initio calculations.
6. What do you mean by therapeutic index?
7. Explain the term *prodrug* with an example.
8. What are refractory materials?
9. Give two examples for phosphatic fertilizers.
10. What is SciFinder used for?
11. Name two major publishers in chemical science and name any two of the journals published by each.
12. What do you mean by impact factor of a journal?

SECTION B: Answer the following questions. Each carries *five* marks.

(Ceiling 30 Marks)

13. Discuss the Classification of nanomaterials based on nanoscale dimensionality.
14. Explain the impact of combinatorial organic synthesis on drug discovery.
15. What is a potential energy surface? Differentiate between local minima and global minima.
16. Discuss the preparation of paracetamol and aspirin.
17. Explain the preparation of TiO₂ through the sulphate process.
18. Discuss three types of glasses, its composition and uses.
19. Write a short note on the carbon range and uses of various fractions of petroleum distillation.

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. Discuss the twelve principles of *green chemistry*.
21. (a) Discuss the theories of colour and chemical constitution of fabric dyes.
(b) Write a note on intellectual property rights (IPR).

(1 × 10 = 10 Marks)