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R – 3127

Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, September 2023

First Degree Programme under CBCSS

Chemistry

Foundation Course II

CH 1221 : METHODOLOGY AND PERSPECTIVES OF SCIENCES AND GENERAL INFORMATICS

(2017-2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Answer in **one** word to maximum of **two** sentences. Each question carries **1** mark.

1. Differentiate units and dimensions in measuring physical quantities.
2. Define the term null hypothesis.
3. Give any two examples of alchemist's contribution to modern chemistry.
4. Give any two interdisciplinary areas associated with chemistry.
5. Give any two differences between accuracy and precision.
6. What is INFLIBNET?
7. What is meant by plagiarism?
8. Give any two advantages of micro scale analysis.
9. What is meant by MSDS of chemicals?
10. Give two examples for carcinogenic chemicals.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** questions. Each question carries **2** marks. (Short answer type)

11. Give any one advantage of using a model in the study of chemistry.
12. What is the benefit of record keeping in studying science?
13. What were the ancient speculations in the nature of matter?
14. Define hypothesis testing.
15. Define IPR.
16. What is meant by chemical database?
17. Define the term cheminformatics.
18. Define common ion effect using a suitable example.
19. Give two examples of metallochromic indicators.
20. How can lead ion be precipitated?
21. Define coprecipitation.
22. Define common ion effect.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each question carries **4** marks. (Short essay type)

23. Explain Dalton's model of atom.
24. How Mendeleev's periodic table revolutionised the field of chemistry?
25. What is meant by revision of scientific theories and laws?
26. What are the errors that can be made minimum by the use of controls?
27. 'Internet is a large knowledge repository'. Justify this statement.
28. Discuss the chemistry of redox indicators.

29. Explain gas chromatography technique.

30. Explain the mechanism of precipitate formation in gravimetric analysis. What are the factors that affect solubility of the formed precipitates?

31. Write notes on hazards due to various chemicals.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. Each question carries **15** marks. (essay type).

32. (a) Differentiate between Rutherford's and Bohr's model of atom.

    (b) Write notes on various types of data that are collected during an experiment. How does documentation help in interpretation of these data?

33. (a) Explain the role of computers in statistical analysis of experimental data.

    (b) Write notes on molecular visualisation tools. How does it make the study of chemistry easier and effective?

34. (a) Explain the theory of acid-base and precipitation titrations.

    (b) Discuss in detail the chemistry of acid-base and adsorption indicators using suitable examples.

35. (a) Write notes on various steps that can be adopted to avoid accidents in a chemical laboratory.

    (b) Write the SMILES of Methane, Benzene and cyclohexane.

(2 × 15 = 30 Marks)