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Second Semester B.Sc. Degree Examination, December 2021

First Degree Programme Under CBCSS

Chemistry

CH 1221 — CHEMISTRY ITS ORIGIN, METHODOLOGY AND IMPACTS

(2020 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions. **Each** question carries **1** mark)

1. What do you understand by the term food additives?
2. Give an example for anionic detergent.
3. Who is the father of modern chemistry?
4. What should be the band gap of the semiconductors to be used as solar cell materials?
5. Name an indicator that is used in complexometric titrations.
6. Among $K_2Cr_2O_7$ and $KMnO_4$, which can be used as primary standard?
7. What is deductive reasoning?
8. Define null hypothesis.
9. Write any two theories which were considered as paradigm shift in scientific revolution.
10. What is the peculiarity of a SDF file format?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. Explain the role of sodium benzoate as a food preservative.
12. What is saponification?
13. Define alchemy. How it helps in the evolution of modern chemistry.
14. The solubility of AgCl in water is 0.00179 g/L. Calculate the solubility product of AgCl.
15. What are the characteristics of a primary standard?
16. Explain redox titrations with a suitable example.
17. Give two advantages of cornplexometric titrations.
18. Explain the term trans-fat.
19. Briefly describe the role of science in social cohesion.
20. Distinguish between objectivity approach and subjectivity approach.
21. Explain the role of INFLIBNET in science education in India.
22. Briefly describe about ISSN.
23. Discuss about any two chemical data bases.
24. What are the advantages of Avogadro?
25. Write briefly about absorption indicators.
26. Write a note on plasticity of clay.

(8 × 2 = 16 Marks)

SECTION – C

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

27. What are artificial sweetners? Name two artificial sweetners and draw their structure.
28. Discuss about the health effects of junk foods.
29. Write a note on photosynthesis.

30. Discuss the principle and applications of coniplexometric titrations.

31. Describe the theory of acid - base indicators.

32. Write a note on distribution of random errors.

33. Discuss the principle of MRI scanning.

34. Discuss about emergency procedures in chemical splashes to the body.

35. What are pigments? Discuss the importance of pigments in paint industry using any two particular examples.

36. Write a note on precipitation titrations.

37. Discuss the basic principles and applications of gas chromatography.

38. What are the primary requirements of a good paint? Differentiate between oil based and latex based paints.

(6 × 4 = 24 Marks)

SECTION – D

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

39. (a) Discuss the hazards and toxicity of shampoos and hair dyes.

    (b) What is green chemistry? How we can implement micro level analysis as a green chemistry practice for inorganic qualitative analysis?

40. (a) Discuss the major contributions of Friedrich Wolher and Marie Sklodowska Curie to Modern chemistry.

    (b) What are food preservatives? How they are classified? Give examples.

41. (a) Differentiate between conventional and nanostructured solar cell. What are the advantages of nanostructured solar cells over conventional solar cells?

    (b) Discuss about the applications of radioactive isotopes in cancer diagnosis and treatment.

42. What is titration curve? Discuss the titration curve for the neutralisation of :

(a) Strong acid with a strong base

(b) Strong acid with a weak base.

43. What is gravimetry? Discuss briefly on gravimetric estimation of Barium.

44. "Revision of scientific theories are essential when it is unable to dealt with new situations. Justify this statement by taking atom model as an example.

(2 × 15 = 30 Marks)