

1. Basic concepts of chemistry.
2. States of matter.
3. Structure of Atom.
4. Equilibrium.
5. Surface chemistry.
6. Chemical Kinetics.
7. Redox reaction and electro chemistry.
8. Solutions.
9. Chemical Bonding and Molecular structure.
10. Thermodynamics.
11. Classification of elements.
12. Hydrogen.
13. General principles and processes of isolation of element and s, p, d, f - block elements.
14. Coordination compounds and organo metalics.
15. Hydrocarbons.
16. Aromatic Hydrocarbons.
17. Haloalkanes and haloarenes.
18. Alcohols, phenols and ethers, acids, amines, polymers.
19. Chemistry in everyday life – Drugs and Medicines.
20. Stability Constants of Metal Complexes and their applications.
21. Supra molecular and photo inorganic chemistry.
22. Group Theory and its applications.
23. Chemistry of D----- and F----- Block Elements.
24. Inorganic reactions mechanism.
25. Catalysis and Bio-Inorganic Chemistry.
26. Inorganic rings, cages and Metal Cluster Compounds.
27. Introduction to the solution of Multi Electron Problems.
28. Nano Chemistry.
29. Spectral Techniques.
30. Organo transition Metal Chemistry.
31. Bio-Inorganic Chemistry.
32. Analytical Techniques.
33. Materials/Nuclear and Radio-Chemistry.
34. Green Chemistry-Inter Disciplinary Approach towards sustainable developments.
35. Reactive intermediates in Organic Chemistry.
36. Stereo Chemistry of Organic Compounds.
37. Spectroscopy of Organic Compounds.
38. Reagents and Methods of Organic Synthesis. Lanthanide shift reagents.
39. Photo Chemistry and Peri Cyclic reactions.
40. Medicinal Chemistry.
41. Chemistry of life process and Bio-active Compounds.
42. Polymer Chemistry and Processing and role of Catalysis synthesis.
43. Advanced Organic Synthesis.
44. Supra Molecular Chemistry and Carbo Cycling Rings.
45. Terpene and Steroids/alkaloids and poly-phenols.
46. Newer Synthetic reactions and reagents/Heterocycling Chemistry.
47. Bio-Molecules.
48. Pharmaceutical Techniques/Technology Development.
49. Quantum Chemistry.
50. Statistical Mechanics and Thermodynamics.
51. Electro Chemistry.
52. Kinetics and Macro Molecules.
53. Molecular Structure- Spectroscopic and diffraction methods.
54. Irreversible Thermodynamics.
55. Transport Phenomenon, Surface Phenomenon and Past reactions.
56. Statistical Mechanics Advanced Electro Chemistry, Photochemistry & Radiation Chemistry.
57. Computational Methods.

58. Quantum Chemistry.
59. Chemical Kinetics.
60. Molecular Spectra.
61. Crystal Structure.
62. Macro Molecules.
63. Bio-Physical Chemistry.
64. Physical Chemistry of Materials.
65. Surface Chemistry.
66. Metal ion catalysis.
67. Conventional ceramics/Technical ceramics.
68. Basic concept of crystallography and crystal structure.
69. Chemistry of advanced material/Natural Products.
70. Nuclear, Analytical, Solid State Chemistry.

Topics of syllabus-Teaching Education and Methodology:-

- 1. Learning & Teaching**
- 2. Language across the curriculum**
- 3. Understanding discipline and subject**
- 4. Gender school and Society**
- 5. Pedagogy of a school subject**
- 6. Knowledge and curriculum**
- 7. Assessment for learning**
- 8. Creating an inclusive school**
- 9. Childhood and growing up**
- 10. Drama and Art in Education**