**«FINAL EXAM QUESTIONS SET FOR ORGANIC CHEMISTRY»**

1. Molecular Formula and Structure of Alkanes. *(Keywords: saturated hydrocarbons, single bonds, structural formulas, carbon skeletons, molecular geometry)*
2. Homologous Series of Alkanes. *(Keywords: methane to decane, CnH2n+2 formula, incremental CH2 units, physical property trends, chemical similarities)*
3. Nomenclature of Alkanes. *(Keywords: IUPAC rules, straight-chain alkanes, branched alkanes, prefixes and suffixes, locants and substituents)*
4. Isomerism in Alkanes. *(Keywords: structural isomers, chain branching, positional isomerism, molecular diversity, constitutional isomers)*
5. Physical Properties of Alkanes. *(Keywords: boiling points, melting points, density, hydrophobic nature, state of matter)*
6. Chemical Reactivity of Alkanes. *(Keywords: low reactivity, combustion, halogenation reactions, cracking, thermal stability)*
7. Combustion of Alkanes. *(Keywords: complete combustion, carbon dioxide and water, energy release, incomplete combustion, carbon monoxide formation)*
8. Reforming of Alkanes. *(Keywords: isomerization, cyclization, aromatic compound formation, catalytic reforming, fuel quality improvement)*
9. Industrial Applications of Alkanes. *(Keywords: fuel sources, petrochemical feedstocks, solvents, lubricants, paraffin wax)*
10. Alkanes as Fuels. *(Keywords: gasoline components, natural gas, liquefied petroleum gas (LPG), high calorific value, eco-friendly energy)*
11. Introduction to Alkenes. *(Keywords: unsaturated hydrocarbons, double bonds, C=C bond geometry, hydrocarbon derivatives, electrophilic reactivity)*
12. Structure and Nomenclature of Alkenes. *(Keywords: IUPAC naming, Double bond position, cis-trans isomerism, functional group priority, substituent naming)*
13. Reactivity of alkenes. *(Keywords: electrophilic addition, hydrogenation, halogenation, polymerization, oxidation reactions)*
14. Hydration of alkenes. *(Keywords: alcohol formation, acid catalysis, reaction mechanism, Markovnikov’s rule, hydrolysis reactions)*
15. Hydrogenation of alkenes. *(Keywords: saturated hydrocarbons, catalytic hydrogenation, nickel catalysts, energy release, industrial applications)*
16. Polymerisation of alkenes. *(Keywords: addition polymerization, polythene formation, catalysts, monomer conversion, plastic production)*
17. Industrial Applications of Alkenes. *(Keywords: polymer production, chemical intermediates, synthetic materials, fuel industry, pharmaceuticals)*
18. Markovnikov's Rule. *(Keywords: electrophilic addition, regioselectivity, hydrogen atom addition, unsymmetrical alkenes, reaction products)*
19. Introduction to Alkynes. *(Keywords: triple bonds, unsaturated hydrocarbons, linear geometry, high reactivity, hydrocarbon series)*
20. Structural Features of Alkynes. *(Keywords: C≡C bond, linear alignment, bond length and strength, pi bonds, electron density)*
21. Physical Properties of Alkynes. *(Keywords: boiling points, melting points, hydrophobicity, density, volatility)*
22. Reactivity of the Triple Bond. *(Keywords: electrophilic addition, hydrogenation, hydration, polymerization, oxidative reactions)*
23. Hydrogenation of Alkynes. *(Keywords: formation of alkenes, catalysts, complete hydrogenation, energy release, selective reduction)*
24. Hydration of Alkynes. *(Keywords: ketone formation, mercury(II) catalysis, Markovnikov addition, enol intermediate, reaction mechanism)*
25. Industrial Applications of Alkynes. *(Keywords: acetylene synthesis, welding processes, polymer precursors, organic synthesis, chemical intermediates)*
26. Polymerisation of Alkynes. *(Keywords: conductive polymers, linear structures, catalytic processes, aromatic polymers, high-performance materials)*
27. Introduction to Alkadienes. *(Keywords: conjugated systems, double bonds, hydrocarbon family, synthetic importance, industrial relevance)*
28. Geometric Isomerism in Alkadienes. *(Keywords: cis-trans isomerism, conjugated vs non-conjugated, double bond arrangement, thermodynamic stability, spectroscopic properties)*
29. Reactivity of Alkadienes. *(Keywords: electrophilic addition, polymerization, hydrogenation, oxidation reactions, diels-alder reactions)*
30. Isoprene and Rubber Formation. *(Keywords: natural rubber, polyisoprene chains, vulcanization process, synthetic rubbers, industrial polymers)*
31. Industrial Applications of Alkadienes. *(Keywords: rubber production, synthetic polymers, adhesives, coatings, elastomers)*
32. Alkadiene Synthesis via Elimination Reactions. *(keywords: dehydrohalogenation, dehydration reactions, catalysts, conjugated dienes, synthetic strategies)*
33. Cycloalkanes. *(Keywords: ring structures, single bonds, saturated hydrocarbons, conformational analysis, strain energy)*
34. Reactivity of Cycloalkanes. *(Keywords: substitution reactions, ring-opening reactions, strain relief, chemical stability, thermal reactions)*
35. Combustion Reactions of Cycloalkanes. *(Keywords: energy release, carbon dioxide and water, complete combustion, incomplete combustion, environmental impact)*
36. Halogenation Reactions of Cycloalkanes. *(Keywords: substitution reactions, radical mechanisms, chlorination, bromination, reaction specificity)*
37. Addition Reactions of Cycloalkanes. *(Keywords: hydrogenation, halogen addition, electrophilic addition, ring-opening, catalysis)*
38. Oxidation Reactions of Cycloalkanes. *(Keywords: selective oxidation, ketone formation, alcohol intermediates, oxidizing agents, reaction mechanisms)*
39. Cycloalkanes in Organic Chemistry. *(Keywords: synthetic intermediates, medicinal chemistry, natural products, conformational analysis, biological relevance)*
40. Applications of Cycloalkanes. *(Keywords: fuel components, pharmaceutical precursors, synthetic pathways, industrial solvents, lubricants)*
41. Halogen Derivatives of Hydrocarbons. *(Keywords: alkyl halides, halogen substitution, reactivity trends, synthetic applications, industrial uses)*
42. Halogenation of Alkanes. *(Keywords: Free radical mechanism, chlorination, bromination, photochemical reactions, reaction products)*
43. Preparation of Alkyl Halides. *(Keywords: halogenation, hydrohalogenation, alcohol substitution, catalytic methods, industrial synthesis)*
44. Hydroxyderivatives. *(Keywords: alcohols, phenols, hydroxyl group, chemical reactivity, industrial applications)*
45. Alcohols: Properties and Characteristics. *(Keywords: hydrogen bonding, polarity, boiling points, solubility in water, acid-base properties)*
46. Alcohols: Preparation and Reactions. *(Keywords: fermentation, hydration of alkenes, oxidation reactions, reduction of carbonyls, substitution reactions)*
47. Alcohols: Oxidation and Reduction. *(Keywords: aldehyde formation, carboxylic acids, reduction to alkanes, oxidizing agents, catalytic reduction)*
48. Phenols: Properties and Characteristics. *(Keywords: aromatic hydroxyls, acidity, hydrogen bonding, solubility, reactivity trends)*
49. Introduction to Carbonyl Compounds. *(Keywords: aldehydes, ketones, C=O functional group, electrophilic nature, industrial importance)*
50. Physical Properties of Aldehydes and Ketones. *(Keywords: boiling points, polarity, solubility, volatility, dipole moments)*
51. Preparation of Aldehydes. *(Keywords: oxidation of alcohols, dehydrogenation, partial oxidation, catalytic processes, industrial synthesis)*
52. Preparation of Ketones. *(Keywords: Secondary alcohol oxidation, Friedel-Crafts acylation, hydrolysis of geminal dihalides, Grignard reactions, synthetic pathways)*
53. Introduction to Carboxylic Compounds. *(Keywords: Carboxyl group (-COOH), acidity, functional group derivatives, natural occurrence, industrial importance)*
54. Physical Properties of Carboxylic Acids. *(Keywords: hydrogen bonding, high boiling points, solubility in water, acidity trends, polarity)*
55. Preparation of Carboxylic Acids. *(Keywords: oxidation of aldehydes, hydrolysis of esters, Grignard reagent reactions, carbon dioxide fixation, fermentation)*
56. Reactions of Carboxylic Acids. *(Keywords: esterification, reduction to alcohols, amide formation, decarboxylation, substitution reactions)*
57. Carboxylic Compounds. Environmental Impact and Sustainability. *(Keywords: carbon footprint, renewable resources, green chemistry, eco-friendly solvents, biodegradable materials)*
58. Complex Ethers. *(Keywords: ether group (-O-), symmetrical and asymmetrical, volatile nature, solvents in organic reactions, industrial applications)*
59. Synthesis of Complex Ethers. *(Keywords: Williamson ether synthesis, dehydration of alcohols, reaction mechanisms, catalysts in ether production, applications in industries)*
60. Complex Ethers in Food and Flavourings. *(Keywords: aromatic ethers, natural flavor compounds, fragrance enhancers, solvent properties, synthetic flavoring agents)*