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NSES CURRICULUM: HIGH SCHOOL SCIENCE

Eureka.in 3DS Content List

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CATEGORY	TOTAL TOPIC	TOTAL DURATION
Physical Science	547	29.02.01
Life Science	172	06.45.28
Earth and Space Science	22	01.06.06
Science in Personal and Social Perspectives Standard	37	01.57.18
Add-On Category	384	17.41.23
TOTAL	1162	56.32.16

SUBCATEGORY	TOTAL TOPIC	TOTAL DURATION
Physical Science	547	29.02.01
Structure of atoms	28	02.12.15
Structure and properties of matter	259	12.26.53
Chemical reactions	75	02.50.16
Motions and forces	98	06.24.00
Conservation of energy and increase in disorder	25	01.14.57
Interactions of energy and matter	62	03.53.40
Life Science	172	06.45.28
The Cell	48	02.05.57
The Molecular Basis of Heredity	28	00.43.05
Biological Evolution	38	01.15.53
The Interdependence of Organisms	19	00.36.22
Matter, Energy, and Organization in Living Systems	15	00.43.01
The Behavior of Organisms	24	01.21.10
Earth and Space Science	22	01.06.06
Energy in the Earth System	3	00.15.02
Geochemical Cycles	7	00.10.31

SUBCATEGORY	TOTAL TOPIC	TOTAL DURATION
Origin and Evolution of the Earth System	11	00.36.27
The Origin and Evolution of the Universe	1	00.04.06
Science in Personal and Social Perspectives Standard	37	01.57.18
Personal and Community Health	26	01.18.36
Natural Resources	1	00.04.35
Environmental Quality	7	00.24.37
Science and Technology in Local, National and Global Challenges	3	00.09.30
Add-On Category	384	17.41.23
Diversity of Life	25	00.07.25
Plant Kingdom	64	02.47.55
Animal Kingdom	15	00.42.03
Human Body	31	01.36.49
Biotechnology	15	00.35.41
Virtual Lab	24	00.00.00
Coordination Chemistry	11	00.25.45
Electrochemistry	18	00.59.39
Colligative Properties	9	00.14.15
Equilibrium	8	00.15.37
Surface Chemistry	3	00.11.03

SUBCATEGORY	TOTAL TOPIC	TOTAL DURATION
Applied Chemistry	10	00.20.31
Study of Some Compounds	16	01.03.37
f-block elements	5	00.00.00
Analysis and Estimation of Organic Compounds	4	00.05.48
Electronics and Communication	12	00.32.45
Heat and Thermodynamics	10	00.50.56
Light and Optics	3	00.18.30
Modern Physics	11	01.01.41
Oscillations and Waves	7	00.07.53
Mechanics	61	03.55.26
Electromagnetism	11	00.27.58
Units, Physical quantities and Vectors	11	00.60.06
TOTAL TOPICS	1162	56.32.16

Physical Science

Topic Name	Duration	Sim	Int
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Structure of atoms

- **Core Topics**

1.	Physical Nature of Matter	00.02.19	
2.	Atomic Mass, Molecular Mass and Formula Unit Mass	00.06.31	
3.	The Mole Concept	00.04.13	√
4.	Thermionic Emission	00.08.19	
5.	Thomson's Atomic Model	00.04.07	
6.	Rutherford's Atomic Model	00.04.03	√
7.	Millikan's Oil-Drop Experiment (Charge of an Electron)	00.07.24	
8.	Properties of Nucleons	00.06.40	
9.	Isotopes of Hydrogen	00.02.07	
10.	Isotopes, Isobars and Isotones	00.00.00	√
11.	Electronic Configuration of Elements	00.05.38	√
12.	Size of Nucleus and Nuclear Density	00.04.55	√
13.	Atoms, Molecules and Ions	00.07.04	
14.	Energy Released in Nuclear Fission	00.05.07	
15.	Nuclear Chain Reaction	00.06.37	
16.	Nuclear Fusion	00.04.06	
17.	The Sun (Part-1)	00.05.15	√
18.	The Sun (Part-2)	00.05.25	√

Physical Science

Topic Name	Duration	Sim	Int
19. Carbon-14 Decay	00.00.00	√	
20. Radioactivity and Group Displacement Law	00.00.00	√	
21. Radioactivity	00.07.41		
22. Radioactive Isotopes	00.07.50		
23. Artificially Produced Radioisotopes and Their Uses	00.06.23		
24. Alpha Emission	00.05.03		√
25. Beta Emission	00.06.55		
26. Absorption of gamma radiation	00.00.00	√	

- **Suggested Topics**

1. Range of mass	00.05.45		
2. Formulae of Compounds (Using Valencies)	00.02.48		

Structure and properties of matter

- **Core Topics**

1. Atoms, Molecules and Ions	00.07.04		
2. Electronic Configuration of Elements	00.05.38	√	
3. Formal Charge	00.00.00	√	
4. Valency	00.06.36		
5. Chemical Bonding	00.05.11	√	

Physical Science

Topic Name	Duration	Sim	Int
6. Covalent Bonds	00.05.16		
7. Types of Covalent Bond and Lewis Representation	00.03.20		
8. Polar and Non Polar Covalent Bonds	00.03.30		
9. Shapes of Covalent Molecules	00.00.00	√	
10. Co-ordinate Bond	00.03.21		
11. Hydrogen Bonding	00.06.12		
12. Types of Hydrogen Bonds	00.01.12		
13. Identifying Hydrogen Bonds	00.00.00	√	
14. Geometry of Molecules	00.06.43		
15. Electron Geometry and Molecular Geometry	00.03.33		
16. VSEPR Theory	00.04.02		
17. The Sigma (σ) and the Pi (π) Bond	00.07.25	√	
18. Bonding in Carbon	00.05.05		
19. Properties of Non-Metals Favouring the Formation of Covalent Bonds	00.03.25		
20. Polarity of Molecules	00.04.44		
21. Bond Energy	00.07.28	√	
22. Electronegativity and Bond Character	00.03.34		
23. Atomic Orbitals	00.05.24		√
24. Factors Favouring the Formation of Ionic Compounds-I	00.05.13		
25. Factors Favouring the Formation of Ionic Compounds-II	00.05.41		

Physical Science

Topic Name	Duration	Sim	Int
26. Hydrogen Molecule : A VBT Approach	00.02.01		
27. M O Diagram: Homonuclear Diatomic Molecules	00.00.00	√	
28. Hydrogen Molecule: (The Molecular Orbital Approach)	00.06.09		
29. The Hydrogen Molecule(Molecular Orbital Diagram)	00.06.02		
30. Oxygen Molecule (The Molecular Orbital Diagram)	00.03.50		
31. Fractional Bond Orders	00.04.01		
32. Bond Order	00.04.15		
33. M O Diagram : Heteronuclear Diatomic Molecules	00.00.00	√	
34. Molecular Orbital Diagram of Ions	00.00.00	√	
35. Hybridization of Atomic Orbitals	00.00.00	√	
36. Types of Hybridization in Organic Compounds: sp^2 Hybridization in Ethene	00.03.34	√	
37. Bonding in Acetylene	00.04.19	√	
38. Fission of a Covalent Bond	00.05.25		
39. sp^3d Hybridization in PCl_5	00.01.23		
40. sp^3d^2 Hybridization in SF_6	00.01.29		
41. Types of Hybridization in Organic Compounds (sp^3 Hybridization in Ethane)	00.04.37	√	
42. The Stability of an Expanded Octet of PCl_5 (Using the Sudgen's Concept of Singlet Linkages)	00.04.35		

Physical Science

Topic Name	Duration	Sim	Int
43. Factors Affecting Electronegativity	00.04.08		
44. Resonance Effect	00.00.00	√	
45. Properties of Phosphine	00.04.25		
46. Covalent or Network Solids	00.04.46		
47. Elements and their Symbols	00.00.00	√	
48. Introduction to Modern Periodic Table	00.00.00	√	
49. Origin of the Modern Periodic Table	00.00.00	√	
50. Differences between Lithium and other Alkali Metals - I	00.06.40		
51. Differences between Lithium and other Alkali Metals - II	00.03.19		
52. Electronic Configuration of Noble Gases	00.00.00	√	
53. General Characteristics of Groups	00.01.23		
54. General Characteristics of Periods	00.03.49		
55. Electronic Configurations of Alkaline Earth Metals	00.00.00	√	
56. Electronic Configurations of Group-13 Elements	00.00.00	√	
57. Group 16 elements: Electronic configuration	00.00.00	√	
58. Group 15 Elements: Electronic configuration	00.00.00	√	
59. Anomalous Behaviour of Boron	00.04.35		
60. Variable Valency	00.03.58		
61. Preparation of HCl	00.03.30		

Physical Science

Topic Name	Duration	Sim	Int
62. Oxygen Family: Physical Properties	00.05.12		
63. Covalent Character in Ionic Bonds	00.05.44		
64. Elements, Compounds and Mixtures	00.06.43		
65. Formation of Covalent Molecules or Compounds	00.04.44		
66. Polarization and Polarizability	00.02.40		
67. Distinguishing Between a Mixture and a Compound	00.00.00	√	
68. Primitive Unit Cells (Part - I)	00.04.47		
69. Primitive Unit Cells (Part - II)	00.04.21		
70. Unit Cells in Crystal Lattices or Space Lattices Part-II	00.05.48		
71. Simple Cubic Crystal Lattices (AAA Arrangement)	00.03.15		
72. Face Centred Cubic Crystal Lattice- ABCABC Arrangement	00.05.10	√	
73. Packing Efficiency in FCC	00.00.00	√	
74. AB Type Ionic Crystals	00.04.52	√	
75. The Sodium Chloride Lattice	00.04.19		
76. Density of a Cubic Crystalline Solid	00.00.00	√	
77. Number of Particles in a Cubic Unit Cell	00.06.32	√	
78. Structures of Silicon Dioxide and Carbon Dioxide	00.04.33		
79. Electrovalent or Ionic Compounds and their Properties	00.04.11		

Physical Science

Topic Name	Duration	Sim	Int
80. Packing Efficiency in Simple Cubic Lattice	00.00.00	√	
81. Packing Efficiency in a BCC Lattice	00.00.00	√	
82. Crystalline and Amorphous Solids	00.06.22		
83. The Boiling Points of Alcohols and van Der Waals' Forces	00.03.22		
84. The Boiling Points of Alcohols and Hydrogen Bonding	00.05.12		
85. Physical Properties of Ethanol	00.06.41		
86. Dipole Dipole Interactions	00.04.04		
87. Attractions Between Molecules - London Dispersion Forces	00.02.52		
88. Molecular Display	00.00.00		√
89. 3D Representation of Organic Molecules	00.00.00	√	
90. Determining Melting and Boiling Points	00.00.00	√	
91. Melting and Boiling Point of Water	00.02.47		
92. Determination of Boiling Point of a Compound	00.00.00	√	
93. Determination of Melting Point of a Compound	00.00.00	√	
94. Viscosity	00.03.18		
95. Measurement of Viscosity	00.00.00	√	
96. Depression in Freezing Point: Explanation	00.05.35		
97. Dipole Moment	00.05.31	√	

Physical Science

Topic Name	Duration	Sim	Int
98. Applications of Dipole Moment	00.04.09		
99. Dipole Moment and Bond Character	00.03.02	√	
100. Dipole-Induced Dipole Forces	00.04.01		
101. Physical Properties of Alkyl Halides	00.05.46		
102. Primary, Secondary and Tertiary Haloalkanes	00.00.00		√
103. Physical Nature of Matter	00.02.19		
104. States of Matter (Part-II)	00.02.45	√	
105. Effect of Pressure on the Gaseous State of Matter	00.02.45	√	
106. Heat of Combustion of a Candle	00.00.00	√	
107. Effect of Temperature on the Liquid State of Matter	00.03.36	√	
108. Graham's Laws of Diffusion and Effusion	00.00.00	√	
109. Mole Fraction	00.03.04		√
110. Diffusion	00.02.50		
111. Avogadro's Law	00.00.00	√	
112. Partial Pressure	00.04.47		
113. Maxwell Speed Distribution	00.00.00	√	
114. Volatile Liquids	00.00.00	√	
115. Schottky Defect	00.00.00	√	
116. Kinetic Theory of Matter-1 (SOLID)	00.05.27		
117. Kinetic Theory of Matter-2 (Liquids)	00.04.13		
118. Kinetic Theory of Gases	00.05.37		

Physical Science

Topic Name	Duration	Sim	Int
119. Liquid State	00.03.31		
120. Carbon	00.01.54		
121. Fullerenes	00.01.25		
122. Allotropy	00.04.26		
123. Difference Between Diamond and Graphite	00.04.46	√	
124. Methane	00.01.45		√
125. Alkanes	00.04.57		
126. Classification of Carbon and Hydrogen Atoms in Alkanes	00.02.31	√	
127. Organic Compounds (Classification of Hydrocarbons)	00.00.00	√	
128. Unsaturated Hydrocarbons	00.00.00	√	
129. Chemical Properties of Organic Compounds (Part - 1)	00.04.54		
130. Chemical Properties of Organic Compounds (Part-II)	00.02.57		
131. Addition Reactions of Alkenes	00.03.27	√	
132. Addition Reactions of Alkenes - II	00.02.42		
133. Ozonolysis of Alkenes	00.00.00	√	
134. Mechanism of Ozonolysis of Alkenes	00.00.00	√	
135. Diene Compounds	00.01.30		
136. Alkynes	00.04.51		
137. Classification of Functional Groups (Part-1)	00.04.59		

Physical Science

Topic Name	Duration	Sim	Int
138. Classification of Functional Groups (Part - II)	00.06.21		
139. Alkenes	00.06.11	√	
140. Addition Polymerization (Free Radical Polymerization)	00.03.28		
141. Teflon	00.02.58		
142. Tacticity of Polymers	00.03.16		
143. IUPAC Nomenclature-I(Alkanes)	00.02.09		
144. IUPAC Nomenclature of Acyclic Organic Compounds	00.06.02	√	
145. Conformational Analysis in Cyclohexane	00.01.56		
146. Enantiomers, Meso Forms and Diastereoisomers	00.04.03		
147. Structural Isomerism in Alkanes	00.03.38		
148. Nomenclature of Geometric Isomers	00.02.30		
149. Geometrical Isomerism in Hydrocarbons	00.05.16		
150. Geometrical and Optical Isomerism in Complex Compounds	00.05.03		
151. C.I.P. Rule	00.00.00	√	
152. Destructive Distillation of Coal	00.02.45	√	
153. Biodiesel	00.03.42		
154. Polythene	00.04.13		
155. Effect of Heat on Polythene	00.02.45		
156. Kevlar-The Bullet Resistant Polymer	00.04.03		
157. Polycyclic Aromatic Hydrocarbons	00.05.30		

Physical Science

Topic Name	Duration	Sim	Int
158. Bond line Structures	00.00.00	✓	
159. The Criteria for Aromaticity	00.06.42	✓	
160. Acidic Nature of Alkynes	00.03.55		
161. Structural Isomerism in Coordination Compounds - I	00.00.00	✓	
162. Synthetic Fibres	00.03.45		
163. Homologous Series	00.00.00	✓	
164. Nomenclature of Esters	00.00.00	✓	
165. Nomenclature of Alcohols	00.00.00	✓	
• Suggested Topics			
1. Expansion of Liquid	00.00.00	✓	
2. The Limiting Reactant	00.03.05	✓	
3. Shapes of Orbitals	00.00.00	✓	
4. Ionization Energy	00.02.59	✓	
5. Atomic Radius and its Types	00.01.55	✓	
6. Periodic Trends in Atomic Radii	00.02.39	✓	
7. Factors Affecting Atomic Radii	00.05.16		
8. Atomic Radius and the Halogen Elements	00.03.24	✓	
9. Electronegativity	00.04.39	✓	
10. Electron Affinity	00.03.37		
11. Noble Gases	00.03.57		

Physical Science

Topic Name	Duration	Sim	Int
12. Properties of Nitrogen Gas	00.00.00	√	
13. Quantum Numbers for 3d Electrons	00.00.00		√
14. Quantum Numbers (Part -I)	00.07.02	√	
15. Quantum Numbers (Part -II)	00.09.29	√	
16. Rules for Filling of Atomic Orbitals	00.07.09	√	
17. Formula Weight	00.00.00		√
18. The Empirical Formula and Molecular Formula of a Compound Part-1	00.04.07		
19. The Empirical Formula and Molecular Formula of a Compound Part-2	00.05.40		
20. Standard Solution	00.00.00	√	
21. Formality	00.00.00		√
22. Normality	00.00.00		√
23. Concentrations of Solutions Molarity (M)	00.05.53	√	
24. Concentration of Solutions Molality (m)	00.03.11		√
25. Laboratory Preparation of Hydrogen (Quantitative Aspect)	00.00.00	√	
26. Flame Test	00.00.00		√
27. Principles of Extraction of Metals	00.04.53		
28. Nomenclature of Aliphatic Amines	00.06.31	√	
29. Basic Nature of Amines	00.05.59		
30. Basicity of Aryl Amines Versus Ammonia	00.03.40		
31. Tests to Detect Amines	00.04.53		
32. Preparation of Amines	00.04.38		

Physical Science

Topic Name	Duration	Sim	Int
33. Sulphonation of Benzene	00.00.00	√	
34. Chlorination of Benzene	00.01.56		
35. Friedel-Crafts Alkylation of Benzene	00.00.00	√	
36. Friedel-crafts Acylation of Benzene	00.00.00	√	
37. Nitration of Benzene	00.00.00	√	
38. Structure of Benzene	00.00.00	√	
39. Reactions of Amines with Nitrous Acid	00.02.30		
40. Azo Coupling Reaction	00.03.00		
41. Laboratory Preparation and Physical Properties of Phenol	00.03.05	√	
42. Inductive Effect	00.04.29		
43. Molecular Size and Solubility	00.02.02		
44. Factors Affecting the Solubility of a Solute in a Solvent	00.03.49		
45. Electromeric Effect	00.06.31		
46. Oxidation of Aldehydes	00.05.08		
47. Oxidation of Ketones	00.03.33		
48. Structure and Reactivity of Carbonyl Group	00.05.48		
49. Carbonyl Compounds	00.00.00	√	
50. The Carbonyl Group: Condensation Reactions of Ammonia Derivatives (Mechanism)	00.04.27		
51. Hyperconjugation In Carbocations (No Bond Resonance)	00.02.47		

Physical Science

Topic Name	Duration	Sim	Int
52. Carbocation Stability (Inductive Effect)	00.03.36		
53. Nomenclature of Aldehydes and Ketones	00.05.07	√	
54. Rosenmund Reduction	00.00.00	√	
55. Classification of Ethers	00.02.10		√
56. Soaps and Detergents	00.03.03		
57. Applications of Inductive Effect	00.04.41		
58. Chemiluminescence	00.02.48		
59. Combustion Analysis (Liebig's Method)	00.00.00	√	
60. Nomenclature of Carboxylic Acids	00.00.00	√	
61. Laboratory Preparation of Acetylene	00.00.00	√	
62. Isomers and Isomerism	00.00.00	√	
63. Classification of Alcohols	00.00.00	√	
64. Nomenclature of Phenol	00.00.00	√	
65. Classification of Carbocations	00.00.00		√
66. Nomenclature of Ether	00.00.00	√	
67. Laboratory Preparation of Soap	00.00.00	√	
68. Nomenclature of Halogenated Compounds	00.00.00	√	
69. Drawing Resonance Structures	00.05.00		
70. Formal Charge	00.00.00	√	
71. Laboratory Preparation of Nitric Acid	00.03.03		
72. Allotropic Forms of Phosphorus	00.03.07		
73. Construction of a Blast Furnace	00.03.15		

Physical Science

Topic Name	Duration	Sim	Int
74. Laboratory Preparation of Nitrogen Gas	00.00.00	√	
75. Commercial Preparation of Nitrogen Gas	00.00.00	√	
76. Preparation of Carboxylic Acids from Primary Alcohols and Aldehydes	00.04.46		
77. Preparation of Carboxylic Acids from Esters	00.03.07		
78. Kolbe's Reaction	00.00.00	√	
79. Oxides of Nitrogen	00.03.35		
80. Haloarenes Nucleophilic Substitution Reactions (I)	00.04.37		
81. Haloarenes (Electrophilic Substitution Reactions)	00.06.30		
82. Haloarenes Nucleophilic Substitution Reactions (II)	00.03.22		
83. Carboxylic Acid: Preparation From Acyl Halide	00.00.00	√	
84. Nucleophilic Addition of HCN	00.04.49		
85. Directive Influence of Functional Groups in Mono Substituted Benzene	00.00.00	√	
86. Esterification	00.00.00	√	
87. Oxidation States of d-Block Elements	00.00.00	√	
88. Gabriel Phthalimide Synthesis	00.00.00	√	
89. Sulphonation of Aniline	00.00.00		√
90. Brownian Motion (Introduction)	00.05.35		
91. Boyle's Law (Part-1)	00.02.48	√	

Physical Science

Topic Name	Duration	Sim	Int
92. Boyle's Law (Part-2)	00.02.41	√	
93. To Verify Boyle's Law	00.00.00	√	
94. Charles' Law	00.00.00	√	

Chemical reactions

• Core Topics

1. Synthesis of Aspirin	00.04.23		
2. Combustion and its Types	00.02.00		
3. Types of Fuels	00.02.15		
4. Ideal Fuel	00.03.47		
5. Types of Organic Reactions	00.05.29		
6. Heat Change During Chemical Reactions	00.01.30		
7. Heat of Combustion of a Candle	00.00.00	√	
8. Heat of Solution	00.03.40	√	
9. Calorific Value and Fuel Efficiency	00.04.25	√	
10. Determination of Calorific Value of Fuels	00.00.00	√	
11. Combustible and Non Combustible Substance	00.00.00	√	
12. Redox Reaction	00.05.11		
13. The Chemistry of Corrosion	00.00.00	√	
14. Oxidation Numbers	00.04.12		
15. Polyatomic Ions	00.02.37		

Physical Science

Topic Name	Duration	Sim	Int
16. Disproportionation Reaction	00.03.54		
17. Lewis Theory of Acids and Bases	00.01.41		
18. What are Acids and Bases?	00.02.56		
19. Di and Polybasic Acids and Di and Polyacidic Bases	00.05.12		
20. Physical Properties of Bases	00.02.23		
21. Physical and Chemical Changes	00.03.26		
22. Green House Gases	00.04.01	√	
23. Effect of Temperature on pH of Water	00.00.00	√	
24. The Common Component of all Acids	00.00.00	√	
25. Determining pH	00.00.00	√	
26. Properties of Acids and Bases	00.00.00	√	
27. Classification of Acids, Bases and Salts	00.00.00		√
28. pH of Rain Water	00.00.00	√	
29. Acidic Buffer	00.00.00	√	
30. Basic Buffer	00.00.00	√	
31. pH Scale and its Limitations	00.08.23		
32. Salt Hydrolysis	00.00.00	√	
33. Calculating pH for Strong and Weak Acids	00.00.00	√	
34. Calculating pH for Strong and Weak Bases	00.00.00	√	
35. Acid Base Titration	00.00.00	√	
36. Neutralization	00.03.14		

Physical Science

Topic Name	Duration	Sim	Int
37. Preparation of Soluble Salts	00.05.00		
38. Preparation of Insoluble Salts	00.02.13		
39. Common Ion Effect	00.04.07		
40. Nernst Equation	00.03.38		
41. Electrophilic and Nucleophilic Reagents	00.05.04		
42. Oxidation and Reduction	00.02.46		
43. Properties of Acetic Acid	00.00.00	√	
44. Enthalpy of Formation	00.00.00	√	
45. pH of Salt Solutions	00.00.00	√	
46. Rate of Reaction	00.00.00	√	
47. Rate of Reaction (Effect of Surface Area and Catalyst)	00.04.07		
48. Rate of Reaction (Effect of Temperature)	00.04.42		
49. Initial Rate Method	00.00.00	√	
50. Carbon-14 Decay	00.00.00	√	
51. Average and Instantaneous Rate of Reaction	00.07.38		
52. Kinetics of First Order Reaction	00.00.00	√	
53. Kinetics of Second Order Reaction	00.00.00	√	
54. Collision Theory	00.07.19		
55. Adsorption and the Nature of Adsorbent	00.02.38		
56. Bond Length	00.04.56		
57. Classification of Chemical Reactions	00.00.00	√	

Physical Science

Topic Name	Duration	Sim	Int
58. Homogeneous Catalysts	00.03.40		
59. Heterogeneous Catalysts	00.03.19		
60. Catalytic Converter	00.06.21		
61. Enzymes as biocatalysts	00.03.22	√	
• Suggested Topics			
1. Ion Electron Method	00.00.00	√	
2. Thermite Reaction	00.04.02		
3. Destructive Distillation of Wood	00.00.00	√	
4. Re-arrangement and Elimination Reactions	00.01.47		
5. Mechanism of a Nucleophilic Substitution Reaction	00.07.39		
6. Nucleophilic Substitution Reactions of Ethers	00.03.10		
7. Ring Substitution Reactions of Carboxylic Acids	00.00.00	√	
8. Sandmeyer's Reaction	00.00.00	√	
9. Williamson Synthesis	00.05.28		
10. Rosenmund Reduction	00.00.00	√	
11. Extraction of Sulphur	00.02.41		
12. Phenol: Reaction Mechanisms	00.00.00	√	
13. Making Picric Acid	00.00.00	√	
14. Oxidation of Ethanol	00.00.00	√	

Physical Science

Topic Name	Duration	Sim	Int
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Motions and forces

- **Core Topics**

1. Rolling motion	00.09.24		
2. Force: A Push or a Pull	00.02.22		
3. Effects of Force	00.03.07		
4. Types of Force (Part-1)	00.02.51		
5. Types of Force (Part-2)	00.02.12		
6. Balanced Forces	00.04.26		
7. Newton's First Law of Motion	00.03.10		
8. Momentum and Newton's Second Law of Motion	00.07.07		
9. Newton's Second Law of Motion	00.09.03	√	
10. Newton's Third Law of Motion	00.03.48		
11. Third Law of Motion using Two Spring Balances	00.00.00	√	
12. Free Body Diagrams	00.04.35		
13. Centripetal Force	00.00.00	√	
14. Gravitation	00.00.00	√	
15. Mass and Weight	00.05.01		
16. Spring Balance	00.05.32		√
17. Freely Falling Body	00.00.00	√	
18. Acceleration due to Gravity 'g' Using a Simple Pendulum	00.00.00	√	

Physical Science

Topic Name	Duration	Sim	Int
19. Gravitational Field and Gravitational Potential	00.00.00	√	
20. Variation of Gravitational Acceleration with Altitude	00.00.00	√	
21. Escape Speed	00.09.00		
22. Electrostatic Force (A Non-contact Force)	00.04.49		
23. Gold-Leaf Electroscope	00.00.00	√	
24. Electric Charge	00.05.15		
25. Properties of Electric Charge	00.05.28		
26. Electrostatic Force and Coulomb's Law	00.05.35		
27. Coulomb's law	00.00.00	√	
28. Tension Produced in a String	00.04.11		
29. Electromagnet (Strength of its Magnetic Field)	00.04.11		
30. Electromagnetic Induction	00.03.47		
31. Phenomenon of electromagnetic induction	00.00.00	√	
32. Mutual Induction	00.10.00		
33. Magnetic Field due to a Straight Wire Carrying Current (Part-1)	00.06.02	√	
34. Magnetic Field due to a Straight Wire Carrying Current (Part-2)	00.04.28	√	
35. Magnetic Field due to a Current Carrying Circular Coil (Part-1)	00.03.02	√	
36. Magnetic Field due to a Current Carrying Circular Coil (Part-2)	00.03.50	√	

Physical Science

Topic Name	Duration	Sim	Int
37. Magnetic Field due to a Current Carrying Solenoid (Part-2)	00.03.02		
38. Fleming's Left Hand Rule	00.02.32		
39. Force on a Current-Carrying Conductor in a Magnetic Field	00.05.15	√	
40. Force on a current-carrying straight conductor in a magnetic field - Experiment	00.00.00	√	
41. Explanation of Motor Force	00.03.06		
42. Fundamentals of a DC Motor	00.07.33	√	√
43. AC Motor	00.05.14		√
44. Fleming's Right Hand Rule	00.02.09		
45. AC Generator	00.06.05	√	√
46. Electromagnet	00.02.48		√
47. Torque on a Current Carrying Loop in a Uniform Magnetic Field	00.06.47	√	
48. DC Motor	00.04.01		
49. Faraday's Experiments	00.00.00	√	
50. Lenz's Law	00.04.13	√	
51. Eddy Currents	00.09.30		
52. Effects Of Eddy Currents (Electromagnetic Damping)	00.09.08		
53. Effects of Eddy Currents (Levitation)	00.03.58		

Physical Science

Topic Name	Duration	Sim	Int
54. Motion of Charge in a Magnetic Field (Part-1)	00.06.57	√	
55. Motion of Charge in a Magnetic Field (Part-2)	00.06.06	√	

• Suggested Topics

1. Angular Velocity and Angular Frequency	00.07.18		
2. To Find the Range of a Projectile	00.00.00	√	
3. Electrostatic potential	00.04.50		
4. Distance and Displacement	00.05.11		
5. Electric Potential (Part-1)	00.04.20		
6. Electric Potential (Part-2)	00.02.36		
7. Reed Switch	00.03.30	√	√
8. Magnetic Relay	00.03.59		
9. Equations of Motion (Using Graph)	00.09.47		
10. Motion of a Block on an Inclined Plane	00.00.00	√	
11. To find the downward force acting on a roller, along an inclined plane	00.00.00	√	
12. Electric Field	00.04.04		
13. Electric Field Lines	00.02.56		
14. Gauss's Theorem (Part-1)	00.04.24		
15. Gauss's Theorem (Part-2)	00.03.59		
16. Application of Gauss's Theorem (Part-1)	00.03.51		
17. Applications of Gauss's Theorem (Part-2)	00.06.56		

Physical Science

Topic Name	Duration	Sim	Int
18. Capacitor	00.08.34		√
19. Dielectrics: Polar and Non-polar	00.05.28		
20. Dielectrics in a Capacitor	00.05.51		
21. Capacitance of a Parallel Plate Capacitor	00.00.00	√	
22. Van de Graaff Generator	00.04.16	√	√
23. Photocopier	00.04.40		
24. Domain Theory of Magnetism	00.00.00	√	
25. Magnetic Dipole Moment	00.07.05	√	
26. Types of Magnetism	00.02.54		
27. Magnetic Declination	00.01.33		
28. Force between two Parallel Wires Carrying Current	00.00.00	√	
29. Conversion of a Galvanometer into Ammeter	00.00.00	√	
30. Conversion of a Galvanometer into Voltmeter	00.00.00	√	√
31. Transformers	00.09.17		√
32. Energy Losses in a Transformer	00.06.20		
33. RC Circuit	00.04.55		
34. RL Circuit (Growth Phase)	00.08.06	√	
35. RL Circuit (Decay Phase)	00.06.00	√	
36. Cyclotron	00.06.29		
37. LC Oscillations	00.06.52	√	

Physical Science

Topic Name	Duration	Sim	Int
38. Electric Field due to a Dipole along its Axis	00.00.00	✓	
39. Electric Field and Potential Due to a Point Charge	00.00.00	✓	
40. Electric Field due to a Dipole on its Equatorial Plane	00.00.00	✓	
41. Electric Dipole and its Physical Significance	00.07.19		
42. Alternating Voltage applied to an Inductor	00.00.00	✓	
43. Alternating Voltage applied to a Capacitor	00.00.00	✓	

Conservation of energy and increase in disorder

- **Core Topics**

1. Verification of Law of conservation of energy by Double-Inclined Plane Method	00.00.00	✓	
2. Transformation of Energy	00.08.02		
3. Conservation of Energy	00.06.44		
4. Work and the First Law of Thermodynamics	00.04.23		
5. Thermochemical Equations	00.00.00	✓	
6. Kinetic Energy	00.05.17		
7. Potential Energy	00.07.17		
8. Maxwell Speed Distribution	00.00.00	✓	
9. Heat and Temperature: The Concept	00.06.55		

Physical Science

Topic Name	Duration	Sim	Int
10. Entropy, Free Energy and Spontaneity of a Reaction	00.05.04		
11. Change in Entropy	00.00.00	√	
12. Pressure - Volume(P-V) Work	00.00.00	√	
13. Enthalpy of Neutralization	00.00.00	√	
14. Working of a Bomb Calorimeter	00.00.00	√	
15. Calorific Value and Fuel Efficiency	00.04.25	√	
16. Work Done in Chemical Systems	00.00.00		√
17. Electrical Conductivity : Liquids	00.00.00	√	
18. Transfer of Heat (Conduction)	00.04.41	√	
19. Heat Conduction and Steady State	00.05.20	√	
20. Thermal Conductivity	00.06.35	√	

• **Suggested Topics**

1. Vertical Axis Windmill	00.06.55	√	
2. Newton's Cradle	00.00.00	√	
3. Energy of a Simple Harmonic Oscillator	00.00.00	√	
4. Geometrical Representation of Simple Harmonic Motion	00.00.00		
5. Graphical Representation of Simple Harmonic Motion	00.03.19	√	

Physical Science

Topic Name	Duration	Sim	Int
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Interactions of energy and matter

- **Core Topics**

1.	Sound	00.03.53	
2.	Propagation of Sound Waves through Different Media	00.02.47	√
3.	Superposition of Waves	00.00.00	√
4.	Sound Propagation in Air	00.02.42	
5.	The Propagation of Sound Waves through Air	00.04.35	
6.	Speed of Sound	00.06.39	√
7.	Speed of Sound in Air	00.00.00	√
8.	SONAR	00.04.41	
9.	Doppler Effect in Sound	00.06.11	
10.	Different Cases of Doppler Effect	00.05.32	
11.	Waves	00.04.18	
12.	Longitudinal and Transverse Waves	00.00.00	√
13.	Measurement of wavelength using Diffraction grating	00.00.00	√
14.	Speed of a pulse along the string	00.00.00	√
15.	Beats	00.06.43	√
16.	Ripple Tank Experiment to Illustrate Interference	00.06.59	√
17.	Electromagnetic Spectrum (Part - 1)	00.05.19	√

Physical Science

Topic Name	Duration	Sim	Int
18. Electromagnetic Spectrum (Part - 2)	00.03.58		
19. Production of electromagnetic waves	00.09.22		
20. Accelerated Charge and Electromagnetic Waves	00.06.35		
21. Quantum Numbers (Part -I)	00.07.02	√	
22. Quantum Numbers (Part -II)	00.09.29	√	
23. Atomic Energy levels	00.06.04	√	
24. Emission Spectra and the Flame Test	00.06.02	√	
25. Hydrogen Spectrum and its Explanation by Bohr	00.07.10		
26. Comparing Conductors and Electrolytes	00.04.49		
27. Ohm's Law	00.07.26	√	
28. Factors affecting resistance	00.00.00	√	
29. Dependence of current on potential difference across a resistor	00.00.00	√	
30. Types of Resistors	00.06.46		
31. Variable Resistors (Potentiometer & Rheostat)	00.06.30		√
32. Series Connection of Resistors	00.01.38	√	
33. Parallel Connection of Resistors	00.00.00	√	
34. Metre Bridge	00.00.00	√	
35. Laws of Combination of Resistors using Metre Bridge	00.00.00	√	
36. Semiconductors	00.07.05		
37. Intrinsic Semiconductors	00.03.42		

Physical Science

Topic Name	Duration	Sim	Int
38. Extrinsic Semiconductor (Part-1)	00.04.02		
39. Extrinsic Semiconductor (Part-2)	00.02.49		
40. p-n Junction Diode (Part-1)	00.04.22		
41. p-n Junction Diode (Part-2)	00.05.01		
42. I- V Characteristics of a p-n Junction Diode	00.00.00	√	
43. Primary Concept of IC (Integrated Circuit)	00.04.31		
44. Metallic Conductors	00.03.32		

• **Suggested Topics**

1. Light Sources And Photometry	00.08.24		
2. Basics of a Transistor	00.04.36		
3. Characteristics of a Common Emitter Transistor	00.00.00	√	
4. Regions of Operation of a Transistor	00.06.08		
5. I-V characteristics of a Zener Diode	00.00.00	√	
6. Resistance per unit length of a wire	00.00.00	√	
7. Internal resistance of a cell using potentiometer	00.00.00	√	√
8. Comparison of emf of two cells using potentiometer	00.00.00	√	
9. Reflection of Sound	00.03.48		
10. To study the reflection of sound	00.00.00	√	
11. Infrasonics and Ultrasonics	00.05.13		

Physical Science

Topic Name	Duration	Sim	Int
12. Wheatstone Bridge	00.00.00	√	
13. Wavefronts and Huygens' Principle	00.07.00		
14. Huygen's principle and refraction	00.08.11		
15. Young's Double-Slit Experiment (Introduction)	00.04.58		
16. Young's Double-Slit Experiment (Intensity of Fringes)	00.07.08		
17. Linear Polarization of Light	00.00.00	√	
18. Polarization of Light and Malus's Law	00.00.00	√	
TOTAL TOPICS IN PHYSICAL SCIENCE – 547	29.02.01		

Life Science

Topic Name	Duration	Sim	Int
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The Cell

- **Core Topics**

1. Prokaryotes	00.03.38	√	
2. Eukaryotic cell	00.03.02	√	
3. Cell structure (Plant cell)	00.02.04	√	√
4. Role of components of a cell membrane	00.00.00		√
5. Physiology of cell membrane	00.05.06	√	√
6. Cell Wall And Vacuoles	00.02.35		
7. Secondary cell wall	00.02.00		
8. Nucleus	00.00.00		√
9. Cell organelles (ER, Golgi body)	00.03.59		√
10. Cell organelles (Ribosomes, centrioles)	00.04.05		√
11. Structure of Mitochondria	00.02.38	√	
12. The role of ATP in active transport	00.02.20		
13. Chemiosmosis (ATP synthesis)	00.03.12	√	√
14. Enzymes as biocatalysts	00.03.22	√	
15. Enzyme inhibition	00.03.40		
16. Cofactors	00.03.51		
17. ATP as energy currency	00.04.25		
18. Cell and its DNA	00.03.43		√
19. Chromosomes, genes and DNA	00.03.50		√

Life Science

Topic Name	Duration	Sim	Int
20. DNA Replication (Prokaryotic)	00.00.00	√	
21. Transcription	00.00.00	√	
22. Protein synthesis (Translation)	00.04.26	√	√
23. Cell division (Mitosis)	00.04.15	√	
24. Photosynthesis in plants	00.03.50	√	√
25. Light is necessary for Photosynthesis	00.00.00	√	
26. Photosynthesis (Light reaction)	00.07.17		√
27. Euglena	00.04.33		√
28. Embryonic development	00.04.21		
29. Stem cells	00.03.44		
30. Stem Cells (Types and applications)	00.00.00	√	
31. Darkfield microscopy	00.02.00		√
32. Scanning electron microscope	00.00.00		√
33. Microscope and Cells	00.02.28	√	
34. Compound Microscope	00.02.02	√	
35. Structure of Onion peel and Cork cells	00.01.34		
36. Preparation of temporary mount of an onion peel	00.00.00	√	
37. Preparation of temporary mount of cheek cells	00.00.00	√	
38. Temporary Mount of Leaf Peel	00.00.00	√	
39. Shape of cells	00.04.38		√
40. Blood cells	00.04.51	√	

Life Science

Topic Name	Duration	Sim	Int
41. Structure of Cilia in Paramecium	00.01.15		
42. Transport across membranes	00.03.56	√	√
43. Bulk transport	00.02.28		
44. Plasmolysis	00.02.17		
45. Mitosis	00.03.16	√	
46. Extracellular and intracellular enzymes	00.02.56		
47. Enzymes (The biological catalysts)	00.02.20		
48. Chromatographic isolation of photosynthetic pigments	00.00.00	√	

The Molecular Basis of Heredity

• Core Topics

1. Complex structure of DNA	00.06.15		
2. Importance of nucleic acids	00.03.05		
3. Cell and its DNA	00.03.43		√
4. DNA versus RNA	00.06.12		
5. Chromatin structure	00.01.40		√
6. Nitrogen Bases	00.02.02		
7. Chromosomes, genes and DNA	00.03.50		√
8. DNA Replication (Prokaryotic)	00.00.00	√	
9. Genetic code	00.00.00	√	
10. Human sex determination	00.01.42		

Life Science

Topic Name	Duration	Sim	Int
11. Mutation	00.02.28		√
12. Mutation and Mutagens	00.00.00	√	
13. Gene Mutation	00.04.30		
14. Damage caused by UV radiation	00.01.37		
15. Genes, homologous chromosomes and cystic fibrosis	00.03.07		
• Suggested Topics			
1. DNA Structure	00.02.54	√	√
2. Principle of dominance	00.00.00	√	
3. Law of dominance	00.00.00	√	
4. Incomplete dominance	00.00.00	√	
5. Dihybrid cross	00.00.00	√	
6. Mendel's law of segregation	00.00.00	√	
7. Test cross	00.00.00	√	
8. Law of Independent Assortment	00.00.00	√	
9. Sex-linked Inheritance: Haemophilia	00.00.00	√	
10. Colour blindness	00.00.00	√	
11. Lac Operon	00.00.00	√	
12. Tryptophan operon	00.00.00	√	
13. Sex limited inheritance (Drosophila)	00.00.00	√	

Life Science

Topic Name	Duration	Sim	Int
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Biological Evolution

- **Core Topics**

1. Origin of life (Biological)	00.03.32		
2. Urey Miller's Experiment	00.03.55		
3. Hominid evolution	00.00.00	√	
4. Classification of living things	00.02.33		
5. Types of Viruses	00.03.42	√	√
6. Kingdom Protista	00.03.02		
7. Algae and diatoms	00.02.12		√
8. Spirogyra	00.00.00	√	
9. Types of Fungi	00.03.53		
10. Agaricus (Mushroom)	00.00.00	√	
11. Funaria (Moss)	00.00.00	√	
12. Alternation of generations in bryophytes	00.03.05		
13. Fern	00.00.00	√	
14. Gymnosperms	00.02.28		
15. Angiosperms	00.00.00	√	
16. Alternation of generation In angiosperms	00.03.12		
17. Hydra	00.01.09		√
18. Hydra and regeneration	00.00.00	√	
19. Worms	00.02.49		
20. General characteristics of insects	00.05.05		√

Life Science

Topic Name	Duration	Sim	Int
21. Starfish and snail	00.02.58		√
22. Superclass Agnatha	00.03.31		
23. Fish	00.04.10		√
24. Fish and amphibia	00.03.07		
25. Osteichthyes and chondrichthyes	00.03.41		√
• Suggested Topics			
1. Viruses	00.03.02	√	√
2. Viral Replication	00.00.00	√	
3. Types of Bacteria I	00.00.00	√	
4. Binary Fission in Amoeba	00.00.00	√	
5. Yeast and fungi	00.02.57		√
6. Budding in Yeast	00.00.00	√	
7. Filter feeding	00.02.26		
8. Bony Fish	00.00.00	√	
9. Aphids	00.01.27		√
10. Bird flight	00.03.39		
11. Evidences of evolution (Vestigial organs)	00.04.18		
12. Hardy-Weinberg's principle	00.00.00	√	
13. Hominid evolution	00.00.00	√	

Life Science

Topic Name	Duration	Sim	Int
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The Interdependence of Organisms

- **Core Topics**

1. Food chain	00.02.52		
2. Energy flow in an ecosystem	00.03.48		
3. Food Web	00.00.00	√	
4. Ecological pyramids	00.05.07		√
5. Trophic Pyramid	00.00.00	√	
6. Forest ecosystem	00.02.12		
7. Aquatic ecosystem	00.02.30		
8. Ecological succession in ponds	00.02.56		
9. Role of air in climate control	00.00.00	√	
10. Evaporation and Condensation	00.00.00	√	
11. The movement of air	00.00.00	√	
12. Air pollution	00.02.32	√	
13. Global warming	00.02.25		
14. Water pollution and its effect (Eutrophication)	00.03.14		
15. Lichens as pollution indicators	00.00.00	√	
16. Photochemical smog	00.03.44		

Life Science

Topic Name	Duration	Sim	Int
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- **Suggested Topics**

1. Ponds and lakes	00.02.06		√
2. Ecological succession in ponds	00.02.56		
3. Primary productivity of an ecosystem	00.00.00	√	

Matter, Energy, and Organization in Living Systems

- **Core Topics**

1. The amazing process of Photosynthesis	00.00.00	√	
2. Monosaccharide and Disaccharide	00.02.56	√	
3. Carbohydrates	00.02.07	√	
4. Proteins and Fats	00.02.39		
5. Fats	00.00.00	√	
6. Cholesterol	00.04.01		
7. Amino Acids	00.06.12		
8. Organic molecules of life - Nucleic acids	00.03.29		
9. Importance of nucleic acids	00.03.05		
10. Structure of DNA	00.02.54	√	√
11. ATP as energy currency	00.04.25		
12. Structure of Monosaccharides	00.00.00	√	
13. Energy flow in an ecosystem	00.03.48		
14. Ecological pyramids	00.05.07		√

Life Science

Topic Name	Duration	Sim	Int
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- **Suggested Topics**

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| 1. Simple tests for carbohydrates, fats and proteins | 00.02.18 | | |
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The Behavior of Organisms

- **Core Topics**

- | | | | |
|---|----------|---|---|
| 1. Structure of neuron | 00.03.22 | √ | √ |
| 2. Types of neurons | 00.03.49 | | √ |
| 3. Neuroglial cells | 00.02.04 | √ | √ |
| 4. Nervous system | 00.03.13 | √ | |
| 5. Nerve | 00.00.00 | | √ |
| 6. Brain (Anatomy and function) | 00.04.37 | √ | |
| 7. Brain- Pituitary gland | 00.07.06 | | |
| 8. Spinal cord (Myelon) | 00.03.31 | √ | |
| 9. Cranial Nerves | 00.01.56 | √ | |
| 10. Impulse transmission | 00.02.57 | √ | √ |
| 11. Impulse transmission (Action potential) | 00.03.45 | √ | √ |
| 12. Synaptic transmission | 00.07.23 | √ | |
| 13. Reflex arc | 00.03.03 | | √ |
| 14. Eye (Anatomy and physiology) | 00.05.07 | √ | |
| 15. Colour vision | 00.00.00 | √ | |
| 16. Organs of Hearing & Balance | 00.05.15 | | |

Life Science

Topic Name	Duration	Sim	Int
17. Mechanism of hearing	00.05.13	√	
18. Tongue (Organ of taste)	00.04.14	√	
19. Olfactory system of human beings	00.02.12		
20. Thermoregulation by the skin	00.03.08	√	√
• Suggested Topics			
1. Meninges of the brain	00.02.42		√
2. Hindbrain or rhombencephalon	00.00.00		√
3. Disorders of the brain (Multiple sclerosis)	00.03.41		
4. Neuromuscular junction	00.02.52	√	√
TOTAL TOPICS IN LIFE SCIENCE – 172	06.45.28		

Earth and Space Science

Topic Name	Duration	Sim	Int
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Energy in the Earth System

- **Core Topics**

1. Temperature of the Earth	00.04.22		
2. The Sun (Part-1)	00.05.15		√
3. The Sun (Part-2)	00.05.25		√

Geochemical Cycles

- **Core Topics**

1. Water cycle	00.00.00	√	
2. Carbon cycle	00.00.00	√	
3. Nitrogen cycle	00.04.08		
4. Phosphorus cycle	00.04.04		
5. Atom Economy	00.00.00	√	
6. Layers of the Earth's Atmosphere	00.00.00	√	
7. Physical Nature of Matter	00.02.19		

Origin and Evolution of the Earth System

- **Core Topics**

1. The Sun (Part-1)	00.05.15		√
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Earth and Space Science

Topic Name	Duration	Sim	Int
2. The Sun (Part-2)	00.05.25		√
3. Evolution of Solar System	00.01.56	√	
4. Solar System (The Inner Planets)	00.06.22	√	
5. Radioactivity and Group Displacement Law	00.00.00	√	
6. Isotopes, Isobars and Isotones	00.00.00	√	

• Suggested Topics

1. Kirchhoff's Law of Radiation	00.04.09		
2. Blackbody Radiation and Planck's Law	00.00.00	√	
3. Blackbody Radiation: Stefan-Boltzmann Law	00.04.56		
4. Light Sources And Photometry	00.08.24		
5. Hertzsprung-Russell Diagram	00.00.00	√	

The Origin and Evolution of the Universe

• Core Topics

1. Nuclear Fusion	00.04.06		
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TOTAL TOPICS IN EARTH AND SPACE SCIENCE – 22 **01.06.06**

Science in Personal and Social Perspectives Standard

Topic Name	Duration	Sim	Int
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Personal and Community Health

- **Core Topics**

1. Bacteria and Virus	00.03.38		
2. Diarrhoea	00.03.11		
3. Cholera (Cellular damage)	00.02.39		
4. Viral diseases (Influenza and polio)	00.03.20		√
5. Chickenpox	00.03.35		√
6. AIDS	00.05.41	√	√
7. Rheumatoid Arthritis	00.05.10		
8. Cancer	00.03.33		
9. Nanomedicine	00.07.10		
10. Drug resistance	00.02.03		
11. Types of vaccines	00.02.10		
12. Study of common disease-causing organisms (Entamoeba histolytica)	00.00.00	√	
13. Disease causing organism-Microsporium	00.00.00	√	
14. Deficiency diseases (Vitamin A, B ₁ , C)	00.01.24		
15. High calorie diet and obesity	00.03.09		
16. Reproductive Health	00.00.00	√	

Science in Personal and Social Perspectives Standard

Topic Name	Duration	Sim	Int
• Suggested Topics			
1. Glucose metabolism disorder (Diabetes)	00.03.03		√
2. Types of Diabetes	00.03.55		
3. Complications of diabetes	00.03.46		
4. Disorders of the heart	00.02.13	√	
5. Atherosclerosis (Heart disease)	00.01.57	√	
6. Arteriosclerosis	00.04.58		
7. Passive smoking and bronchitis	00.02.31		
8. Bone disorder (Osteoporosis)	00.03.06	√	
9. Scoliosis	00.00.00		√
10. Dialysis	00.06.24		

Natural Resources

• Core Topics		
1. Renewable Resources of Energy	00.04.35	

Environmental Quality

• Core Topics		
1. Air pollution	00.02.32	√
2. Global warming	00.02.25	
3. Ozone layer	00.03.37	√

Science in Personal and Social Perspectives Standard

Topic Name	Duration	Sim	Int
4. Waste disposal (Vermicomposting)	00.02.50		
5. Wastewater Treatment	00.05.10		
6. The Ozone Layer and UV Radiation	00.05.31		

- **Suggested Topics**

1. Plastic recycling	00.02.32		
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Science and Technology in Local, National and Global Challenges

- **Core Topics**

1. Air pollution	00.02.32	√	
2. Water pollution and its effect (Eutrophication)	00.03.14		
3. Photochemical smog	00.03.44		

TOTAL TOPICS IN SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES STANDARD – 37

Add-On Category

Topic Name	Duration	Sim	Int
Diversity of Life			
1. Taxonomical aids - I	00.00.00	√	
2. Taxonomy as a Science	00.03.42		
3. Rules of Nomenclature	00.03.43		
4. Identification of Bacteria	00.00.00	√	
5. Identification Of Garden Lizard(Calotes)	00.00.00	√	
6. Identification of Palaemon (Prawn)	00.00.00	√	
7. Disease causing organism-Microsporium	00.00.00	√	
8. Study of common disease-causing organisms (Entamoeba histolytica)	00.00.00	√	
9. Identification of Hydra	00.00.00	√	
10. Identification of Frog	00.00.00	√	
11. Identification of frog eggs	00.00.00	√	
12. Pheretima posthuma (Earthworm)	00.00.00	√	
13. Bird (Vertebrata)	00.00.00	√	
14. Hirudinaria granulosa (Leech)	00.00.00	√	
15. Bombyx mori (Silk moth)	00.00.00	√	
16. Life cycle of silk moth	00.00.00	√	
17. Wool production	00.00.00	√	
18. Oryctolagus cuniculus (rabbit)	00.00.00	√	
19. Oscillatoria	00.00.00	√	
20. Riccia (Liverworts)	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
21. Fasciola hepatica (Common liver fluke)	00.00.00	√	
22. Apis indica (Honey bee)	00.00.00	√	
23. Scoliodion (Shark)	00.00.00	√	
24. Asterias (Starfish)	00.00.00	√	
25. Conservation of wildlife	00.00.00	√	

Plant Kingdom

1. The plant	00.02.38		√
2. Types of Plants	00.03.01		
3. Function of the parts of the plants	00.04.41		
4. Identification of deficiency diseases in plants	00.00.00	√	
5. Plant development	00.03.08		
6. Effect of water scarcity on plants	00.03.02		
7. Structure of the leaf	00.04.52		√
8. Internal structure of dicotyledonous leaf	00.03.33		
9. Types of venation	00.02.14		
10. Root systems	00.03.26		
11. Flower	00.02.59	√	
12. Flowering & Non-Flowering Plants	00.04.04		
13. Parts of a flower	00.02.52	√	
14. Morphology of flower	00.04.08	√	√
15. Typical flower	00.04.01	√	√

Add-On Category

Topic Name	Duration	Sim	Int
16. Flower types	00.06.00		
17. Gynoecium: apocarpous and syncarpous	00.00.59	√	√
18. Aestivation	00.03.58		
19. Inflorescence - I	00.04.17		
20. Inflorescence - II	00.03.18		
21. Floral arrangement	00.04.55		√
22. Adaptation for self and cross pollination	00.03.13		
23. Position of the ovary	00.03.16	√	
24. Fabaceae	00.02.33		√
25. Solanaceae	00.02.52		√
26. Liliaceae	00.02.22		√
27. Malvaceae	00.02.57	√	√
28. Brassicaceae (Mustard plant)	00.03.35	√	√
29. Maize seed	00.02.35		
30. Monocot seed germination	00.02.51		
31. Fruits	00.04.22		
32. Seeds	00.00.00	√	
33. Parts of dicot embryo	00.00.00	√	
34. Conditions required for seed germination	00.01.54	√	
35. Demonstrate the process of anaerobic respiration	00.00.00	√	
36. Pollen Development	00.03.27		
37. Development of female gametophyte	00.02.22		

Add-On Category

Topic Name	Duration	Sim	Int
38. Physiology of photoperiodism	00.02.56		
39. Hatch-Slack pathway or C4 cycle	00.00.00	√	
40. Different methods of pollination	00.00.00	√	
41. Vascular bundles in dicots	00.03.46		
42. Internal structure of a monocot stem	00.05.49		
43. Internal structure of dicot root	00.03.11		√
44. Monocot root anatomy	00.03.06		√
45. Leaf of maize	00.03.16	√	
46. Factors affecting photosynthesis	00.00.00	√	
47. Light is necessary for Photosynthesis	00.00.00	√	
48. Chromatographic isolation of photosynthetic pigments	00.00.00	√	
49. Photosynthesis - Trapping light energy	00.02.22		
50. Respiration in plants	00.01.42		
51. Measurement of respiratory quotient	00.00.00	√	
52. Experiments on respiration	00.05.53		
53. Exchange of Gases in Roots And Stems	00.03.15		
54. Water potential	00.02.47		√
55. Transpiration	00.02.29	√	
56. Potometer I	00.00.00	√	
57. Potometer II	00.00.00	√	
58. Investigating the effect of temperature on plant cell membranes	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
59. Aerial stem modifications	00.04.54		
60. Vernalization	00.00.00	√	
61. Differentiation, dedifferentiation and redifferentiation	00.04.16		
62. Xerophytes	00.00.00		√
63. Story of cotton and jute	00.03.51		
64. Insectivory	00.03.57		√

Animal Kingdom

1. Regeneration among animals	00.01.45		
2. Cockroach	00.02.47		√
3. Digestive system of cockroach	00.02.38		√
4. Respiration in animals (Hydra and Grasshopper)	00.05.39		
5. Circulatory system in cockroach	00.02.30		
6. Branchial Respiration in Fish	00.04.23		
7. Excretory system (Cockroach)	00.02.11		√
8. Nervous system of cockroach	00.00.00		√
9. Reproductive system of a Cockroach	00.00.00	√	
10. Respiratory system of grasshopper	00.03.23	√	
11. External anatomy of frog (Head)	00.02.15		
12. External anatomy of frog (Trunk)	00.02.29		

Add-On Category

Topic Name	Duration	Sim	Int
13. Blood vascular system - Frog	00.03.37		
14. Brain of frog (Structure and functions)	00.04.01		
15. Reproductive system (Frog)	00.04.25		

Human Body

1. Haemolysis and crenation of RBCs	00.04.59		
2. Double circulation	00.03.21		
3. Detection of blood groups	00.00.00	√	
4. Investigating the effect of pH on amylase activity	00.00.00	√	
5. Investigating effect of concentration on the activity of trypsin	00.00.00	√	
6. Respiratory system (Larynx)	00.06.09		√
7. Complex tubular excretory system	00.03.08		
8. Ultrastructure of kidney	00.02.37	√	
9. Nephron (Structure and functions)	00.00.00	√	
10. Juxtaglomerular apparatus (JGA) and Pancreas	00.03.27		
11. Types of human muscles	00.02.41		
12. Ultrastructure of skeletal muscles	00.03.17		√
13. Mechanism of muscle fibre contraction	00.03.33		√
14. The skeletal system	00.07.16	√	√
15. Anatomy of the bone	00.02.33	√	√
16. Axial skeleton (Rib cage)	00.02.39	√	√

Add-On Category

Topic Name	Duration	Sim	Int
17. Sternum and ribs	00.01.34	√	√
18. Structure of antibody	00.03.02	√	√
19. Antibodies and hybridoma	00.00.00	√	
20. Monoclonal antibodies	00.03.37		
21. Allergy	00.05.11		
22. Mechanism of hormone action (Insulin)	00.05.26		
23. Thyroid gland	00.03.43	√	
24. Parathyroid glands	00.04.53		
25. Adrenal glands	00.03.19	√	
26. Mechanism of hormone action (Adrenaline)	00.03.50		
27. Role of insulin in cell metabolism	00.02.14		
28. Placenta and foetal haemoglobin	00.04.09		
29. Amniocentesis and Medical termination of pregnancy (MTP)	00.04.03		
30. Effect of Antibiotics	00.02.05		
31. ECG and EEG	00.04.03		

Biotechnology

1. Sterilization and Pasteurization	00.00.00	√	
2. Tissue culture	00.03.25		√
3. Application of tissue culture	00.02.55		
4. Somatic hybridization	00.02.47		

Add-On Category

Topic Name	Duration	Sim	Int
5. Application of genetic engineering	00.03.16		
6. Application of biotechnology (Insulin production)	00.00.00	√	
7. Agarose gel electrophoresis	00.00.00	√	
8. Gene amplification using PCR	00.02.24	√	
9. DNA fingerprinting	00.00.00	√	
10. Gene Therapy (SCID)	00.05.25		
11. Plant breeding	00.00.00	√	
12. Application of Antisense Technology	00.04.39		
13. Hydroponics	00.02.07	√	
14. Industrial production of enzymes	00.04.09		√
15. In vitro fertilization	00.04.34		

Virtual Lab

1. Detection of Glucose by Fehling's test	00.00.00	√	
2. Benedict's test for Glucose	00.00.00	√	
3. Detection of sucrose	00.00.00	√	
4. Detection of starch	00.00.00	√	
5. Biuret test for protein detection	00.00.00	√	
6. Detection of protein by Xanthoproteic test	00.00.00	√	
7. Sudan III test for fat	00.00.00	√	
8. Emulsification Test for Fats	00.00.00	√	
9. Detection of albumin in urine	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
10. Detection of Urea in Urine	00.00.00	√	
11. To detect the presence of glucose in urine	00.00.00	√	
12. Detection of bile pigments in urine	00.00.00	√	
13. Chemical analysis of Adulterants	00.00.00	√	
14. Activity of salivary amylase on starch	00.00.00	√	
15. To study the pH of different types of soil	00.00.00	√	
16. Demonstration of water holding capacity of soils	00.00.00	√	
17. Study of different water samples for pH	00.00.00	√	
18. Study of clarity of water from different sources	00.00.00	√	
19. Study of pollen germination	00.00.00	√	
20. Study of mitosis in an onion root tip	00.00.00	√	
21. Study of pollen germination and growth of pollen tube	00.00.00	√	
22. Effect of temperature on the activity of salivary amylase	00.00.00	√	
23. Effect of temperature on the activity of lipase	00.00.00	√	
24. Observing protocista in water using the hanging drop technique	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
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Coordination Chemistry

1. Relation between Geometry and Magnetic Properties of Transition Metal Complexes	00.03.30		
2. Introduction to Coordination Compounds	00.04.32		
3. Geometry of $K_4[Fe(CN)_6]$ based on its Magnetic Property	00.03.02		
4. Classification of Ligands	00.06.02		√
5. Geometry of $[Fe(H_2O)_6]^{3+}$	00.00.00	√	
6. Geometry of $[Co(NH_3)_6]^{2+}$	00.00.00	√	
7. Geometry of $K_3[Fe(CN)_6]$	00.00.00	√	
8. IUPAC Nomenclature of Coordination Compounds	00.00.00	√	
9. Homoleptic and Heteroleptic Complexes	00.03.24		
10. Werner's Theory	00.05.15		
11. Linkage Isomerism	00.00.00	√	

Electrochemistry

1. Faraday's First Law of Electrolysis	00.07.17	√	
2. Faraday's Second Law of Electrolysis	00.02.43		
3. Standard Hydrogen Electrode	00.01.47	√	
4. Use of Standard Hydrogen Electrode as an Anode	00.06.11	√	
5. Use of Standard Hydrogen Electrode as a Cathode	00.04.58	√	

Add-On Category

Topic Name	Duration	Sim	Int
6. Electrode Potential and Standard Electrode Potential	00.04.41		
7. Electroplating Activity	00.00.00	√	
8. Daniell Cell	00.00.00	√	
9. Calculating Emf of a Concentration Cell	00.00.00	√	
10. Factors Affecting the Products of Electrolysis (Part-II)	00.06.19		
11. The Dry Cell	00.00.00	√	
12. Concentration Cell	00.03.13		
13. Osmosis and Osmotic Pressure	00.04.35	√	
14. Electrolysis of Aqueous Cupric Chloride (CuCl ₂)	00.01.38		
15. Galvanic Cell And Salt Bridge	00.03.20		
16. Electrolysis: Molten Lead Bromide	00.04.30		
17. Electrolysis of Aqueous Sodium Chloride (Brine)	00.04.31		
18. Electrolysis of Aqueous Salts using Inert Electrodes	00.03.56		

Colligative Properties

1. Factors Affecting Vapour Pressure of a Solvent	00.02.56		
2. Vapour Pressure of a Solvent	00.01.54		
3. The Degree of Dissociation	00.02.51		
4. Depression in Freezing Point	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
5. Volatile Liquids	00.00.00	√	
6. Raoult's Law	00.00.00	√	
7. Lowering in Vapour Pressure	00.00.00	√	
8. Elevation in Boiling Point	00.00.00	√	
9. Abnormal Molar Masses	00.06.34		

Equilibrium

1. Equilibrium Processes (Physical Equilibrium)	00.05.14		
2. Dynamic Nature of Equilibrium	00.04.08	√	
3. Law of Mass Action	00.00.00		√
4. Percentage Ionization of Weak Acids	00.00.00	√	
5. Introduction to Chemical Equilibrium	00.00.00	√	
6. Solubility Product	00.04.00		
7. Effect of Pressure on Equilibrium	00.02.15		
8. Effect of Addition of Inert Gas on Equilibrium	00.00.00	√	

Surface Chemistry

1. Adsorption and the Nature of Adsorbent	00.02.38		
2. Adsorption	00.08.25		
3. Electrophoresis Experiment	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
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Applied Chemistry

1. The Chemistry of Fire	00.05.23		
2. Coriolis Effect and the Trade Winds	00.04.52		
3. Fire Extinguisher	00.00.00	√	
4. Colorimetry	00.04.07		
5. EDTA Titration Method	00.03.17		
6. Cleansing Capacity of Soap	00.00.00	√	
7. The Dry Cell	00.00.00	√	
8. Rancidity	00.02.52		
9. The Process of Thermoelectric Production	00.00.00	√	
10. Temperature of Air	00.00.00	√	

Study of Some Compounds

1. Compounds of Phosphorus	00.03.06		
2. Derivatives of Carboxylic Acids (Amides)	00.03.28		
3. Derivatives of Carboxylic Acids (Acid Chlorides)	00.02.29		
4. Proteins	00.03.29		
5. Classification of Organic Halides	00.05.39		
6. Diborane	00.03.45		
7. Preparation of Hydrogen Peroxide	00.03.48		
8. Oxidizing Nature of Hydrogen Peroxide	00.04.57		
9. Borax	00.04.25		

Add-On Category

Topic Name	Duration	Sim	Int
10. Quick Lime (Calcium Oxide)	00.03.29		
11. Calcium Carbonate	00.04.00		
12. Xenon Fluorine Compounds	00.06.45		
13. Xenon Oxides (Structure and Hybridization)	00.05.04		
14. Inter-Halogen Compounds	00.05.56		
15. Plaster of Paris	00.03.17		
16. Wurtz Reaction	00.00.00	√	

f-block elements

1. Electronic Configurations of Actinides	00.00.00	√	
2. Oxidation States of Actinides	00.00.00	√	
3. Electronic Configurations of Lanthanides	00.00.00	√	
4. Oxidation States of Lanthanides	00.00.00	√	
5. The f-block Elements	00.00.00	√	

Analysis and Estimation of Organic Compounds

1. Kjeldahl's Method (Estimation of Nitrogen)	00.00.00	√	
2. Dumas Method	00.00.00	√	
3. Carius Method	00.00.00	√	
4. The Lucas Test	00.05.48		

Add-On Category

Topic Name	Duration	Sim	Int
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Electronics and Communication

1. OR Gate	00.04.28		
2. NOR Gate	00.03.27	√	
3. Light Emitting Diode	00.04.32		√
4. AND Gate	00.03.52		
5. NAND Gate	00.00.00	√	
6. NAND as a Universal Gate	00.00.00	√	
7. Amplitude Modulation	00.00.00	√	
8. Bandwidth of Signals	00.09.34		
9. Boolean Expression and Truth Table	00.00.00	√	
10. Frequency Modulation	00.00.00	√	
11. Logic Gates	00.06.52		
12. Unidirectional flow of current in diode and LED	00.00.00	√	

Heat and Thermodynamics

1. Thermodynamic Systems and Zeroth Law of Thermodynamics	00.06.15		
2. The First Law of Thermodynamics	00.06.19		
3. The Second Law of Thermodynamics	00.07.54		
4. Absolute zero and third law of thermodynamics	00.09.55		
5. Newton's Law of Cooling	00.00.00	√	
6. Adiabatic Process	00.06.19		

Add-On Category

Topic Name	Duration	Sim	Int
7. To Study the Effect of Heating on a Bimetallic Strip	00.00.00	√	
8. Ideal Gas Equations	00.00.00	√	
9. Ideal Gas Thermometer	00.08.05		
10. Internal Combustion Engine	00.06.09	√	√

Light and Optics

1. Prism Spectrometer	00.03.55		√
2. Working of a Prism Spectrometer	00.07.06		√
3. Doppler Effect in Electromagnetic Waves	00.07.29		

Modern Physics

1. X - ray Spectrum	00.06.33		
2. Applications of Laser (Part-2) (Barcode Reader)	00.02.19		
3. Discharge of Electricity through Gases	00.02.36		
4. Photoelectric Effect: The concept	00.07.32		
5. Crystalline and Amorphous Solids	00.05.50		
6. Wave-Particle Duality	00.07.56		
7. Radioactive decay law	00.06.49		
8. de Broglies Explanation of Bohr's Postulate of Quantisation	00.07.08		
9. Cathode Ray Tube (CRT)	00.03.31		

Add-On Category

Topic Name	Duration	Sim	Int
10. Maltese Cross Tube	00.04.52		
11. Lasers and their Uses	00.06.35		√

Oscillations and Waves

1. Damped Oscillations	00.07.53		
2. Sonometer: Relation between frequency and length of a given wire under constant tension	00.00.00	√	
3. Sonometer: Relation between the length of a given wire and tension for a constant frequency	00.00.00	√	
4. Force Constant of a Helical Spring	00.00.00	√	
5. Damped Oscillations of a Pendulum	00.00.00	√	
6. Force harmonic oscillation	00.00.00	√	
7. Measurement of Acceleration of a Freely Falling Object	00.00.00	√	

Mechanics

1. Scalars and Vectors (Introduction)	00.06.40		
2. Introduction to Vectors	00.00.00	√	
3. Components of Vectors	00.00.00	√	
4. Moment of Inertia	00.06.40	√	
5. Angular Momentum	00.07.25	√	
6. Conservation of Angular Momentum	00.05.42		

Add-On Category

Topic Name	Duration	Sim	Int
7. Conservation of Angular Momentum (Examples)	00.06.05		
8. Centre of Mass of a System of Particles	00.00.00	√	
9. Motion of Centre of Mass	00.05.32		
10. Elastic Collision	00.00.00	√	
11. Inelastic collision	00.00.00	√	
12. Collisions: Elastic and Inelastic	00.06.29	√	
13. Collision in lab between two spheres	00.00.00	√	
14. Impulse and Crumple Zone	00.06.28		
15. Moment of Inertia (Mathematical expressions)	00.05.13	√	
16. Angular Momentum of a System of Particles	00.00.00	√	
17. Couple	00.07.21		
18. Rolling Friction and Sliding Friction	00.04.05		
19. Thrust and Pressure	00.03.35		
20. Moment of a Force and the Law of Moments	00.07.39		
21. Principle of moments	00.00.00	√	
22. Relation Between Force of Limiting Friction and Normal Reaction	00.00.00	√	
23. Increasing and Reducing Friction	00.04.54		
24. Period of a Simple Pendulum	00.00.00	√	
25. Pressure Exerted by a Solid	00.00.00	√	
26. Conservation of Linear Momentum	00.07.28		

Add-On Category

Topic Name	Duration	Sim	Int
27. Factors Affecting Friction	00.04.28		
28. Applications of Bernoulli's Principle	00.04.38		
29. Drag Force and Terminal Velocity	00.00.00	√	
30. Fluids	00.03.00		
31. Fluids in Motion: Equation of Continuity	00.06.39		
32. Bernoulli's Principle	00.06.23		
33. Pressure in Fluids	00.06.18		
34. Pressure in liquids	00.00.00	√	
35. Aneroid Barometer	00.02.36		
36. Buoyancy	00.00.00	√	
37. Equation of Continuity (Applications)	00.03.20		
38. Measurement of Coefficient of Viscosity	00.00.00	√	
39. Stokes' Law	00.00.00	√	
40. Venturimeter	00.05.36		
41. Capillarity	00.08.51	√	
42. Principle of Floatation	00.07.11		
43. Archimedes' Principle	00.06.39		
44. Archimedes' Principle: The Experiment	00.00.00	√	
45. Archimedes' principle-the exploration	00.00.00	√	
46. Applications of Pascal's Law	00.02.48		
47. Elastic Behaviour of Solids	00.07.06		
48. Young's Modulus	00.00.00	√	
49. Hooke's Law	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
50. Elastic Modulus	00.07.29		
51. Stress and strain	00.07.55		
52. Stress-Strain Curve	00.07.58		
53. Strain Energy	00.08.54		
54. Effect of load on bending of a metal strip (clamped at its end)	00.00.00	√	
55. Effect of load on bending of a strip (clamped at its centre)	00.00.00	√	
56. Work Done by a Constant Force	00.06.45		
57. Work Done by a Variable Force	00.07.00		
58. Work-Energy Theorem	00.05.53		
59. Work- energy theorem for a variable force	00.04.07		
60. Theorem of perpendicular axes	00.05.20		
61. Kinetic Energy of Rolling Motion	00.07.16		

Electromagnetism

1. Kirchhoff's Second Law	00.04.10		
2. Permeability and Permittivity	00.09.22		
3. Drift velocity	00.07.21		
4. Dependence of current on potential difference across a resistor	00.00.00	√	
5. Drift velocity and Origin of Resistivity	00.07.05		
6. Capacitors in parallel	00.00.00	√	
7. Alternating Voltage applied to an Inductor	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
8. Measuring impedance of an inductor	00.00.00	√	
9. Alternating Voltage applied to a Capacitor	00.00.00	√	
10. Power and Energy in AC circuits	00.00.00	√	
11. Series RLC Circuit and Series Resonance	00.00.00	√	

Units, Physical quantities and Vectors

1. Measurement of Time	00.09.04		
2. Errors in measurement	00.09.29		
3. Combination of Errors	00.10.51		
4. Understanding the Significant Figures	00.09.44		
5. Uncertainty in measurement	00.07.29		
6. Determination of Volume of a Given Irregular Lamina Using a Screw Gauge	00.00.00	√	
7. Dimensions of Physical Quantities	00.06.21		
8. Dimensional analysis	00.07.08		
9. Measurement of Mass	00.00.00	√	

Add-On Category

Topic Name	Duration	Sim	Int
10. Determination of the Radius of Curvature of a given Spherical Surface by a Spherometer	00.00.00	√	
11. Determination of Surface Tension by Capillary Rise Method	00.00.00	√	
TOTAL TOPICS IN ADD-ON CATEGORY – 384	17.41.23		
TOTAL TOPICS IN HIGH SCHOOL SCIENCE – 1162	56.32.16		

*Sim = Simulation

*Int = Interactive