Mechanics I

VIDEO LECTURE INDEX / 14 SECTIONS

09	265	91:05:21
CHAPTERS	LECTURES	TOTAL VIDEO TIME

Includes the lecture discussion notes from the spreadsheet. Durations total 91:05:21.

Chapter 01 | Dimensions and Measurement

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
1	1	01. Dimension Analysis Quantities in Physics Units, measurements Dimension Analysis, how to express Quantities in physics, fundamental and derived Quantities	00:09:16
2	2	02. Dimension Analysis Different types of Units Learning different types of units, CGI system, FPS systems System, illustration	00:31:10
3	3	03.Important points and formulae Discussion of Important points of dimensional Formula	00:09:46
4	4	04.Application of Dimension Analysis Application of Dimension Analysis, how to find the unit of contain physical quantity, illustration	00:22:43
5	5	05.Convert newton into dyne & convert jule into erg. Illustration of conversion of newton into dyne, convert jule in to erg,	00:10:49
6	6	06.Convert 1km into meter.p.s Illustration Convert 1km into meter per second	00:04:02
7	7	07.To check the Correctness of Given Physics Equation Illustration and limitations	00:12:02
8	8	08.Research tool to Drive New Relations Concept discussion and illustration	00:12:31
9	9	09.Concept Application Exercise 1 Class exercise illustrations	00:33:54

Chapter 01 | Dimensions and Measurement · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
10	10	10.Concept Application Exercise 2 Class exercise illustrations	00:38:44
11	11	11.Rules of Rounding off Rules of rounding off in uncertain digit, Exercise	00:14:08
12	12	12.Singnificant Error 1 Meaning of significant figures, how to count and calculate, examples and important points	00:23:07
13	13	13.Singnificant Error 2 Propagation of significant digits, sum and difference of measured values, multiplication and division, illustration	00:37:08
14	14	14.Errors in Measurement permissible error How to check error in measurements, examples	00:10:44
15	15	15.Calculation error. Absolute error. Relative percentage error Calculation of error with examples	00:14:18
16	16	16.Propagation and combination error Error in product, division, quantity, summation/difference, illustration	00:21:00
17	17	17.illustrations Illustration, error in measurements	00:29:35
		Chapter 01 TOTAL · 17 lectures	**05:34:57**

Chapter 02 | Basic Mathematics

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
18	1	01.Trignometery Expressing Angles in Degrees Radians Basic part of Mathematics for learning physics, Expressing Angles Degrees and Radians	00:10:13
19	2	02. Trigonometry Positive Negative Angle How to Assign to sign of Angle, First Quadrants, Trigonometric Function, concept Application	00:19:58

Chapter 02 | Basic Mathematics · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
20	3	03. Trigonometry function of other Quadrants Angle corresponding to the second third quadrant, Concept Application	00:37:06
21	4	04.Trignometery Concept Discussion 1 Discussion and illustrations, trigonometric functions	00:12:17
22	5	05.Trignometery Concept Discussion 2 Discussion and illustrations, trigonometric functions	00:37:28
23	6	06.Inverse Trigonometry Inverse Trigonometric Functions and Properties, with some Examples	00:14:03
24	7	07.Plotting Straight-line Basic Quardinate Geometry 1 Plotting Straight line, physical Quantities, important formulae coordinate geometry, illustration	00:23:46
25	8	08.Plotting Straight-line Basic Quardinate Geometry 2 Plotting Straight line, physical Quantities, important formulae coordinate geometry, illustration	00:21:17
26	9	09.Plotting Parabola Basic Quardinate Geometry 1 Quadratic functions, important points, Axis of parabola, vertex parabola, Drawing Parabola	00:21:17
27	10	10.Plotting Parabola Basic Quardinate Geometry 2 How to calculate Vertex parabola, Finding Parabola, Drawing Parabola, illustration	00:23:31
28	11	11.Applications of Parabola Basic Quardinate Geometry 3 Application of Parabola in plotting Position Time Graphs	00:19:28
29	12	12.Elimentery Differentiation Basics Calculus what is calculus, Differentiation, Functions, Differential coefficient or derivative of a Function	00:28:36
30	13	13.Diffrentiation Graphical Representation of derivative of function 1 Graphical representation of Derivative function, instantaneous Velocity, Acceleration, Differentiation of power function	00:17:36
31	14	14.Diffrentiation Graphical Representation of derivative of function2 Application of power formula, constant multiple rules, sum and difference rules, illustration	00:29:46
32	15	15.Diffrentiation Graphical Representation of derivative of function 3 Application of power formula, constant multiple rules, sum and difference rules, illustration	00:17:40

Chapter 02 | Basic Mathematics · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
33	16	16.Differentiation Important functions 1 Differentiation Some important Functions, geometrical significance of Second Derivative, Application of derivative in physics	00:23:37
34	17	17.Differentiation Important functions 2 Multiplication formula in derivative, division & Chain Rule for Derivative, illustrations	00:26:27
35	18	18.Differentiation Important functions Illustrations 1 Application of chain rule with illustration, different methods	00:23:01
36	19	19.Differentiation Important functions Illustrations 2 More application of chain rule with illustration, different methods	00:29:14
37	20	20.Differentiation Minima Maxima 1 Basics of Maxima Minima. Concept develop discussion, Maximum Minimum value of Function, Analysing the curve	00:26:25
38	21	21.Differentiation Minima Maxima 2 Illustrations Discussion and illustrations Maxima Minima	00:29:00
39	22	22.Elementry Integration What is Integration, how to calculate it, application of the integration in physics	00:23:42
40	23	23.Elementry Integration important formulae & functions 1 Integration Formulae, important functions, important properties of integral, examples	00:30:12
41	24	24.Elementry Integration important formulae & functions 2 More important properties of integral Discussion and illustration	00:32:19
42	25	25.Integration by Substitutional Rules of integration by substitutional and Illustration	00:31:37
43	26	26.Use of integration in physics 1 use of Integration in physics with derivation and illustration	00:30:05
44	27	27.Use of integration in physics 2 Graphical representation of Integration, positive negative displacement, calculation of distance	00:14:13
45	28	28.Integration positive negative Change in velocity Discussion and illustrations, positive and negative change in velocity	00:16:26

Chapter 02 | Basic Mathematics · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
46	29	29.Application of integration Application of integration, calculation of work done by integration	00:19:01
		Chapter 02 TOTAL · 29 lectures	**11:29:21**

Chapter 03 | Vectors

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
47	1	01.Vectors & Scalars. Representation of vector Basics of Scalars, Vector, introduction theory, how to represent vector	00:18:01
48	2	02.Types of Vectors Introduction of different types of vector, theory	00:25:26
49	3	03.Vector Addition Vector Addition, how to add vector graphically, Tip to tail method, parallelogram method	00:27:35
50	4	04.Subtraction of Vector Subtraction of Vector, Tip to Tail Method, concept Application with different Approach	00:24:23
51	5	05.Components of Vector 1 Meaning of Components of Vector, finding components of vector in two mutually perpendicular direction, concept application	00:31:12
52	6	06.Components of Vector 2 Finding Components of weight parallel to and perpendicular to an inclined plane, concept application exercise	00:11:40
53	7	07.Components of Vector 3 Expressing a Vector in unit vector notation, concept application exercise with different approaches	00:30:52
54	8	08.Components of Vector 4 Illustration plotting of vector, Analysis, Adding vectors quantitatively	00:30:50
55	9	09.Components of vector 5 Illustration how to express vector in unit vector notation, Expressing Position vector in Component form	00:27:32

Chapter 03 | Vectors · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
56	10	10.Components of Vector 6 Expressing Position, Velocity in Vector Form, Illustration and analysis	00:18:36
57	11	11.Resultant of Vector 1 Analytical method for calculating the two vectors, illustration	00:26:24
58	12	12.Resultant of Vector 2 Analytical method for calculating the two vectors, illustration	00:29:06
59	13	13.Direction cosines of vector Understanding Direction Cosines of a vector, illustration	00:16:02
60	14	14.The Scalar. Dot Product Understanding product of two vectors, how to multiply a vector quantity with another vector quantity	00:09:25
61	15	15.Properties of Dot Product Learning properties of Dot Product, illustration	00:18:18
62	16	16.Scalar-DoT Product Illustration Illustrations for Scalar-Dot Product understanding	00:11:44
63	17	17.Geometric interpretation of Dot Product Learning geometric interpretation of dot product, Discussion	00:13:03
64	18	18.Application of Dot Product in Kinematics How to use Dot Product in Kinematics with examples and illustration	00:28:47
65	19	19.Vector Product-Cross Product 1 What is vector Product, Right hand thumb rule for finding the direction of cross product	00:08:56
66	20	20.Vector Product-Cross Product 2 How to perform the operation cross product, vector product of two quantities	00:14:19
67	21	21.Properties of Cross Product Learning important Properties of Cross Product	00:08:17
68	22	22.Applications of Cross Product Some illustration to apply cross product	00:10:05

Chapter 03 | Vectors · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
		Chapter 03 TOTAL · 22 lectures	07:20:33

Chapter 04 | Kinematics-Motion in One Dimension

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
69	1	01.What Is Kinematics Meaning of Kinematics, Types of Motion, translational motion, particle kinematics, Rest and Motion, frame of Reference	00:17:53
70	2	02.What Is Trajectory Understanding trajectory, trajectory equation	00:30:57
71	3	03What is Distance Displacement Learning Basic Terminology of Motions 1 Basic terminology of motion, Distance Displacement in Two Dimension 1	00:18:46
72	4	04.Learning Basic Terminology of Motions Conclusion-Illustration 2 Basic terminology of motion, Distance Displacement in Two Dimension 2	00:07:39
73	5	05.Basic Terminology of Motions Average Velocity-Speed-Instantaneous Concept of Average Velocity, speed, Instantaneous Velocity, Uniform Velocity, important points	00:09:20
74	6	06.Strengthening the concept with some class exercise and discussion Strengthening the concept with some class exercise and discussion	00:24:40
75	7	07.Kinematics Understanding Motion Through Graphs 1 Understanding Displacement time graph, important points, illustration	00:26:13
76	8	08.Displacement Time Graph Particle Moving with Constant Acceleration 2 Understanding Displacement time graph for particle moving with constant Acceleration, illustration, important points	00:35:55
77	9	09.Kinematics Time Velocity Graphs Velocity time graph, positive negative displacement, particle travelling with constant positive acceleration	00:41:47
78	10	10.Representing Motion Through Graphs Representing Motions Through Graphs, motion under gravity Graphs, Analysis, illustration	00:11:47

Chapter 04 | Kinematics-Motion in One Dimension · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
79	11	11.Representing Motion Graphs Under Gravity Representing Motions Through Graphs, motion under gravity Graphs, Analysis, illustration	00:24:14
80	12	12.Representing Motion Graphs Under Gravity Illustrations Representing Motions Through Graphs, motion under gravity Graphs, Analysis, illustration	00:24:43
81	13	13.Some Additional Graphs 1 Some additional graphs, understanding velocity displacement graphs, Acceleration displacement graph	00:21:26
82	14	14.Some Additional Graphs Illustration 2 Some additional graphs, understanding velocity displacement graphs, Acceleration displacement graph	00:06:52
83	15	15.Some Additional Graphs & Illustration 3 Some additional graphs, Understanding Acceleration displacement graph, discussion	00:28:35
84	16	16.Kinematics Equation 1 kinematics Equations, discussion, illustrations	00:34:01
85	17	17.Kinematics Equation 2 Illustrations-important points	00:11:12
86	18	18.Kinematic Equation -Situation Related to Overtaking Situation Related to Overtaking Problem	00:12:54
87	19	19.Kinematics Equation Displacement in The Nth Second of Motion Understanding Displacement in The Nth Second of Motion-illustration	00:21:32
88	20	20.Motion Under Gravity 1 Basics of motion under gravity-illustrations 1	00:21:56
89	21	21.Motion Under Gravity 2 Basics of motion under gravity-illustrations2	00:22:58
90	22	22.Motion on An Inclined Plane 1 Understanding Motion on An Inclined Plane 1 -illustration	00:21:19
91	23	23.Motion on Inclined Plane Along A Line Other Than the Line of Greatest Slope Understanding Motion on Inclined Plane Along A Line Other Than the Line of Greatest Slope illustration	00:10:15

Chapter 04 | Kinematics-Motion in One Dimension · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
92	24	24.Motion in Incline Plane Sliding of Bead Along the Chord of a Circle Understanding Motion in Incline Plane Sliding of Bead Along the Chord of a Circle	00:07:12
93	25	25.Learning Basics of Relative Motion in One Dimension 1 Basics of Relative Motion in One Dimension -illustration	00:18:25
94	26	26.Learning Basics of Relative Motion in One Dimension 2 Basics of Relative Motion in One Dimension -illustration	00:20:22
95	27	27.Relative Motion Illustrations Relative Motion Illustrations	00:20:20
96	28	28.Application Kinematics Equations in Relative Motion Application Kinematics Equations in Relative Motion	00:19:31
97	29	29.River Boat Problem in One Dimension River boat Problem in One Dimension	00:22:44
		Chapter 04 TOTAL · 29 lectures	**09:55:28**

Chapter 04 | Misc. Problems Motion in One Dimension

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
98	1	01.Motion Under Gravity Illustrations 1	00:20:30
99	2	02.Motion Under Gravity Illustrations 2	00:05:37
100	3	03.Motion Under Gravity Illustrations 3	00:15:28
101	4	04.Motion Under Gravity Illustrations 4	00:28:25

Chapter 04 | Misc. Problems Motion in One Dimension · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
102	5	05.Motion Under Gravity Illustrations 5	00:07:59
103	6	06.Motion Under Gravity Illustrations 6	00:23:18
104	7	07.Motion Under Gravity Illustrations 7	00:05:50
105	8	01. Kinematics Equation illustrations 1	00:09:11
106	9	02. Kinematics Equation illustrations 2	00:09:46
107	10	01.Kinematic Equation problem solving by Graphical method illustration 1	00:16:08
108	11	02.Kinematic Equation problem solving by Graphical method illustration 2	00:15:30
109	12	01.Relative Motion NCERT Problem 1	00:10:01
110	13	02.Relative Motion NCERT Problem 2	00:04:36
111	14	03.Relative Motion NCERT Problem 3	00:04:09
112	15	04.Relative Motion NCERT Problem 4	00:07:31
113	16	05.Relative Motion NCERT Problem 5	00:07:13
114	17	01.Role of Proper frame of Reference in problem 1	00:12:22

Chapter 04 | Misc. Problems Motion in One Dimension · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
		Chapter 04 TOTAL · 17 lectures	03:23:34

Chapter 05 | Kinematics-Motion in Two Dimension

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
115	1	01.Motion in Two Dimension 1 Basics Parameters of Motion in Two Dimension, Express the Acceleration in Moving Curved Path, Kinematics Equations	00:14:31
116	2	02.Motion in Two Dimension 2 Basics Parameters of Motion in Two Dimension, Express the Acceleration in Moving Curved Path, Kinematics Equations	00:10:28
117	3	03.Projectile Motion 1 Understanding Projectile Motion in Two Dimension, Important Points. Theory	00:21:56
118	4	04.Projectile Motion 2 Understanding Projectile Motion in Two Dimension, Important Points. Theory Illustrations	00:16:43
119	5	05.Finding Various Parameters of Projectile Motion 1 Finding Various Parameters in Projectile Motion, Time of Flight T, Maximum Height, Illustration	00:18:50
120	6	06.Finding Various Parameters of Projectile Motion 2 Finding Various Parameters in Projectile Motion, Time of Flight T, Maximum Height, Illustration	00:19:57
121	7	07.Projectile Motion-Equation of Trajectory Meaning of Trajectory, Examples, Trajectory Horizontal Range, Direction of Motion, Illustration	00:26:40
122	8	08.Projectile Motion-Projection from Height Projectile Motion, Projection from Height, Two Dimension Case	00:40:30
123	9	09.Projection from Moving Frame Understanding Projection from Moving Frame with Different Cases and Illustration	00:20:57
124	10	10.Projectile Motion-Inclined Plane 1 Understanding Projectile Motion Incline Plane with Illustration, Finding and Maximum Range of Inclined Plane	00:33:08

Chapter 05 | Kinematics-Motion in Two Dimension · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
125	11	11.Projectile Motion-Inclined Plane 2 Projectile Motion, Inclined Plane Upward Downward Motion, Important Points, Illustrations	00:23:27
126	12	12.Projectile Motion-Inclined Plane 3 Projectile Motion, Inclined Plane Upward Downward Motion, Important Points, Illustrations	00:18:04
127	13	13.Relative Motion 1 Basics and Discussion of Relative Motion, Illustration	00:23:07
128	14	14.Relative Motion 2 Basics and Discussion of Relative Motion, Illustration	00:17:48
129	15	15.Relative Velocity River Man Problem Relative Velocity, River Man Problem Discussion	00:41:38
130	16	16.Swiming Directed Direction Relative Velocity, Swimming in Directed Direction Discussion and Illustration	00:16:45
131	17	17.Relative Velocity Man Umbrella Problem 1 Discussion and Illustration Man Rain Problem	00:17:21
132	18	18.Relative Velocity Man Umbrella Problem 2 Discussion and Illustration Man Rain Problem Inclined Surface	00:28:08
133	19	19.Finding Shortest Distance 1 Finding Shortest Distance Between Two Moving Particles Through Relative Velocity, Illustration	00:13:26
134	20	20.Finding Shortest Distance 2 Finding Shortest Distance Between Two Moving Particles Through Relative Velocity, Illustration	00:24:53
135	21	21.Velocity of Approach 1 Understanding Velocity of Approach and Illustration	00:25:52
136	22	22.Velocity of Approach 2 Velocity of Approach and Illustration	00:21:53
		Chapter 05 TOTAL · 22 lectures	**08:16:02**

Chapter 06 | Newton's Laws of Motion (Without Friction)

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
137	1	01.Basics of Newton's Laws of Motion 1 What Is Force, Classification of Force, Impulse and Average Force, Learning Newton’s First and Second Law of Motion, Illustration	00:25:43
138	2	02.Basics of Newton's Laws of Motion 2 Newton's Second Law of Motion, Illustration, Free Body Diagram, Understanding Contact Force, Illustration	00:27:03
139	3	03.Basics of Newton's Laws of Motion 3 Newton's Third Law of Motion, Illustration, Free Body Diagram, Understanding Contact Force, Illustration	00:22:43
140	4	04.Basics of Newton's Laws of Motion 4 Newton's Third Law of Motion, Illustration, Free Body Diagram, Understanding Contact Force, Illustration	00:32:04
141	5	05.Applicatoins Of Newtons Law of Motion Analyzing Particle in Equilibrium 1 Analyzing A Particle in Equilibrium, Free Body Diagram, Illustration with Different Cases	00:25:11
142	6	06.Applicatoins Of Newtons Law of Motion Analyzing Particle in Equilibrium 2 Analyzing A Particle in Equilibrium, Free Body Diagram, Lamis Theorem, More Illustrations	00:21:35
143	7	07.Applicatoins Of Newtons Law of Motion Analyzing Particle in Equilibrium 3 Analyzing A Particle in Equilibrium, Free Body Diagram, Illustration	00:29:29
144	8	08.Application of Laws of Motion 1 Illustrations	00:26:23
145	9	09.Application of Laws of Motion 2 Illustrations	00:25:30
146	10	10.Application of Laws of Motion -Tension Force 1 Application of Laws of Motion, In Situation of Tension Force, Illustrations	00:38:26
147	11	11.Application of Laws of Motion -Tension Force 2 Application of Laws of Motion, In Situation of Tension Force, Illustrations	00:27:18
148	12	12.Application of Laws of Motion -Tension Force 3 Application of Laws of Motion, In Situation of Tension Force, Illustrations	00:32:32
149	13	13.Tension in Strings or Ropes with Mass 1 Understanding Tension in Strings with Ropes or Mass, Illustrations	00:20:52

Chapter 06 | Newton's Laws of Motion (Without Friction) · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
150	14	14.Tension in Strings or Ropes with Mass 2 Understanding Tension in Strings with Ropes or Mass, Illustrations	00:21:01
151	15	15.Pseudo Force 1 Understanding Pseudo Force, Illustrations	00:33:14
152	16	16.Pseudo Force 2 Pseudo Force, Illustrations	00:37:42
153	17	17.Constraint Relation 1 Understanding Block and Pulley Constraint Relation with Complicated Examples, Theory and Illustrations	00:17:34
154	18	18.Constraint Relation Pulley Block 2 Understanding Block and Pulley Constraint Relation with Complicated Examples, Theory and Illustrations	00:27:11
155	19	19.Applications Constraint Relation 3 Application of Block and Pulley Constraint Relation with Illustration and Discussion	00:26:40
156	20	20.Constraint Relation Wedge Pulley 4 Important Observations of Wedge Block System, Finding Constraint Relation, Free Body Diagram, Illustrations	00:23:19
157	21	21. Constraint Relation Wedge Block Problem 5 Important Observations of Wedge Block System, Finding Constraint Relation, Free Body Diagram, Illustrations	00:11:00
158	22	22.Constraint Relation Wedge Block Problem Solving Different Approach 6 Illustrations with Different Approaches for Finding Constraint Relations	00:38:45
159	23	23.Analysis of Spring Force in Laws of Motion 1 Analysis of Spring Force in Laws of Motion, Calculation Spring Force in Different Cases, Hooke’s Law, Connected Series of Spring	00:40:55
160	24	24.Application of Spring Force in Laws of Motion 2 Illustrations on Spring Force for Better Understanding in Different Cases	00:22:57
161	25	25.Application of Spring Force In Laws of Motion 3 Illustrations on Spring Force for Better Understanding in Different Cases	00:33:32
		Chapter 06 TOTAL · 25 lectures	**11:28:39**

Chapter 06 | Miscellaneous Problems of Laws of Motion 1

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
162	1	Illustration-1 Problem Solving	00:07:59
163	2	Illustration-2 Problem Solving	00:07:52
164	3	Illustration-3 Problem Solving	00:04:46
165	4	Illustration-4 Problem Solving	00:04:47
166	5	Illustration-5 Problem Solving	00:04:36
167	6	Illustration-6 Problem Solving	00:04:23
168	7	Illustration-7 Problem Solving	00:05:59
169	8	Illustration-8 Problem Solving	00:06:26
170	9	Illustration-9 Problem Solving	00:05:59
171	10	Illustration-10 Problem Solving	00:09:57
172	11	Illustration-11 Problem Solving	00:08:03
173	12	Illustration-12 Problem Solving	00:07:26
174	13	Illustration-13 Problem Solving	00:16:56

Chapter 06 | Miscellaneous Problems of Laws of Motion 1 · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
175	14	Illustration-14 Problem Solving	00:10:42
176	15	Illustration-15 Problem Solving	00:08:04
177	16	Illustration-16 Problem Solving	00:08:44
178	17	Illustration-17 Problem Solving	00:06:45
179	18	Illustration-18 Problem Solving	00:06:15
		Chapter 06 TOTAL · 18 lectures	**02:15:39**

Chapter 06 | Laws of Motion 1 - Miscellaneous Problems

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
180	1	01.Application of Law of motion With different Methods 1 Problem Solving	00:43:17
181	2	02.Application of Law of motion With different Methods 2 Problem Solving	00:34:38
182	3	03.Application of Law of motion With different Methods 3 Problem Solving	00:33:50
183	4	04.Application of Law of motion With different Methods 4 Problem Solving	00:19:28
184	5	05.Application of Law of motion With different Methods 5 Problem Solving	00:25:13

Chapter 06 | Laws of Motion 1 - Miscellaneous Problems · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
185	6	06.Application of Law of motion With different Methods 6 Problem Solving	00:23:53
		Chapter 06 TOTAL · 6 lectures	**03:00:19**

Chapter 07 | Newton's Laws of Motion (With Friction)

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
186	1	01.Understanding Friction and Frictional Forces Theory Friction Force, Category of Friction Force, Static-Kinetic Friction, Finding Direction of Friction Force	00:38:42
187	2	02.Analyzing Static and Kinetic Force 1 Analysis Static-Kinetic Friction Force, Why Pull Is Easier Than Push	00:26:12
188	3	03.Analyzing Static and Kinetic Force 2 Analysis Static-Kinetic Friction Force, Why Pull Is Easier Than Push	00:16:29
189	4	4.Friction Force Angle of Repose Meaning of Angle of Repose and Angle of Friction, Illustrations	00:25:12
190	5	05.Friction Force Maximum Minimum Force to Make Object Stationery Application of Friction Force in Laws of Motion, Maximum-Minimum Force to Make Object Stationery, Illustrations	00:34:12
191	6	06.Diffrent Cases of Laws of Motion in Friction Force 1 Different Cases of Laws of Motion with Friction	00:20:59
192	7	07.Diffrent Cases of Laws of Motion in Friction Force 2 Different Cases of Laws of Motion with Friction	00:25:37
193	8	08.Problem Involving Friction Force in Laws of Motion 1 Problems Involving in Friction in Law of Motion, Problem Involving Two Blocks Friction	00:20:36
194	9	09.Problem Involving Friction Force in Laws of Motion 2 Problems Involving in Friction in Law of Motion, Problem Involving Two Blocks Friction	00:36:07

Chapter 07 | Newton's Laws of Motion (With Friction) · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
195	10	10.Analyzing Friction Force Multiple Surfaces 1 Analyzing Friction on Multiple Surfaces, Illustrations	00:17:30
196	11	11.Analyzing Friction Force Multiple Surfaces 2 Analyzing Friction on Multiple Surfaces, Illustrations	00:19:41
197	12	12.Analyzing Friction Force Multiple Surfaces 3 Analyzing Friction on Multiple Surfaces, Illustrations	00:07:22
198	13	13.Anylyzing Friction Force While Walking Understanding Friction While Walking, Free Body Diagram, Illustration	00:31:00
199	14	14.Application Friction and Frictional Forces Illustrations	00:32:18
		Chapter 07 TOTAL · 14 lectures	**05:51:57**

Chapter 07 | More Problems of Friction Force

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
200	1	01.Friction Force Problem Problem Solving	00:24:26
201	2	02.Friction Force Problem Problem Solving	00:28:18
202	3	03.Friction Force Problem Problem Solving	00:26:00
203	4	04.Friction Force Problem Problem Solving	00:12:57
204	5	05.Friction Force Problem Problem Solving	00:15:22

Chapter 07 | More Problems of Friction Force · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
205	6	06.Friction Force Problem Problem Solving	00:08:52
206	7	07.Friction Force Problem Problem Solving	00:06:43
		Chapter 07 TOTAL · 7 lectures	**02:02:38**

Chapter 08 | Work Power Energy

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
207	1	01.Definition of Work 1 Definition of Work, Work Done by Pair of Interacting Forces, Work Done by Friction, Gravity, Concept Application Illustration	00:20:00
208	2	02.Definition of Work Done by Pair of Interacting Forces Definition of Work, Work Done by Pair of Interacting Forces, Work Done by Friction, Gravity, Concept Application Illustration	00:22:47
209	3	03.Concept Application Exercises Illustrations of Work Done	00:19:13
210	4	04.Work Done by Variable Forces 1 Work Done by Variable Force, Graphical Interpretation. Work Done by Spring, Illustrations	00:30:25
211	5	05.Work Done by Variable Forces 2 Work Done by Variable Force, Graphical Interpretation. Work Done by Spring, Illustrations	00:30:40
212	6	06.Work Power Theorem 1 Work Energy Theorem, Important Points, Illustrations	00:20:53
213	7	07.Work Power Theorem 2 Work Energy Theorem, Important Points, Illustrations	00:28:58
214	8	08.Work Power Theorem Applications 1 Learning Work Energy Theorem by Various Mechanic Complicated Problems	00:26:42

Chapter 08 | Work Power Energy · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
215	9	09.Work Power Theorem Applications 2 Learning Work Energy Theorem by Various Mechanic Complicated Problems	00:23:21
216	10	10.Work Power Theorem Applications 3 Learning Work Energy Theorem by Various Mechanic Complicated Problems	00:13:11
217	11	11.Conservative and Non-Conservative forces General Definition of Potential Energy, Relation Between Conservative Force and Potential Energy,	00:25:18
218	12	12.Understanding Potential Energy 1 Learning Potential Energy	00:28:20
219	13	13.Potential Energy illustrations 2 Potential Energy Illustrations	00:24:16
220	14	14.Potential Energy Illustrations 3 Potential Energy Illustrations	00:19:50
221	15	15.Potential Energy Equilibrium Potential Energy Curve, State of Equilibrium, Stable-Unstable, Illustration	00:39:48
222	16	16.Conservaton Of Mechanical Energy & Mechanical Power 1 Meaning of Conservative Forces-Non-Conservative Forces, Illustrations	00:26:07
223	17	17.Conservaton Of Mechanical Energy & Mechanical Power 2 Meaning of Conservative Forces-Non-Conservative Forces, Illustrations	00:30:34
224	18	18.Application of Law of Conservation of Mechanical Energy 1 Understanding Conservation of Mechanical Energy, Theory, Illustration	00:24:01
225	19	19.Application of Law of Conservation of Mechanical Energy 2 Application of Law of Conservation of Mechanical Energy Through Various Illustration	00:20:34
226	20	20.Mechanical Power 1 Understanding Mechanical Power, Theory. Illustrations with Different Approaches	00:25:54
227	21	21.Mechanical Power 2 Illustrations, Power of Water Drawing Pump	00:32:45

Chapter 08 | Work Power Energy · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
		Chapter 08 TOTAL · 21 lectures	08:53:37

Chapter 09 | Circular Motion

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
228	1	01.Variables of Circular Motion 1 Defining Circular Motion, Variables of Circular Motion, Relation Between Linear and Angular Quantities	00:32:40
229	2	02.Variables of Circular Motion 2 Defining Circular Motion, Variables of Circular Motion, Relation Between Linear and Angular Quantities	00:16:15
230	3	03.Variables of Circular Motion 3 Illustrations, Variables of Circular Motion, Important Points, Motion with Constant Angular Acceleration	00:23:20
231	4	04.Relation Between Linear and Angular Velocity 1 Defining Relation Between Linear and Angular Velocity, Illustration, Finding Angular Velocity of a Particle	00:21:48
232	5	05.Relation Between Linear and Angular Velocity 2 RelationBetween Linear and Angular Velocity, Illustration, Finding Angular Velocity of a Particle	00:29:58
233	6	06.Acceleration in Circular Motion 1 Acceleration in Circular Motion, Finding Centripetal Acceleration, Concept Discussion Illustrations	00:36:04
234	7	07.Accelereation In Circular Motion Illustration 2 Acceleration in Circular Motion, Finding Centripetal Acceleration, Concept Discussion Illustrations	00:17:12
235	8	08.Radius of Curvature Understanding Kinematics Circular Motion Radius of Curvature, Concept Application Exercise Illustrations	00:19:56
236	9	09.Dynamics of Circular Motion Centripetal Force-Center Seeking Force 1 Understanding Centripetal Force, Centre Seeking Force in Dynamics of Circular Motion	00:24:01
237	10	10.Dynamics of Circular Motion Centripetal Force-Center Seeking Force 2 Acceleration in Circular Motion, Finding Centripetal Acceleration, Concept Discussion Illustrations	00:21:13

Chapter 09 | Circular Motion · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
238	11	11.Dynamics of Circular Motion-Centrifugal Force 1 Understanding Centrifugal Force, Centre Seeking Force in Dynamics of Circular Motion	00:22:33
239	12	12.Dynamics of Circular Motion-Centrifugal Force 2 Understanding Centrifugal Force, Theory, Discussion and Illustrations, Dynamics of Circular Motion	00:21:01
240	13	13.Applications of The Concept of Circular Motion in Different Situations 1 Applications of The Concept of Circular Motion in Different Situations, Circular Track, Banking of Roads, Illustrations	00:32:08
241	14	14.Applications of The Concept of Circular Motion in Different Situations 2 Dynamics of Circular Motion Application Death Well or Rotor, Conical Pendulum, Illustrations	00:27:37
242	15	15.Circular Motion in Vertical Plane 1 Learning Circular Motion in Vertical Plane of a Pendulum Bob, Illustration	00:39:19
243	16	16.Circular Motion in Vertical Plane Illustrations 2 Illustration, Circular Motion in Vertical Plane, Dynamics of Circular Motion	00:29:25
244	17	17.Circular Motion in Vertical Plane Illustrations 3 Illustrations, Circular Motion in Vertical Plane, Dynamics of Circular Motion	00:21:23
245	18	18.Circular Motion in Vertical Plane Illustrations 4 Illustrations, Circular Motion in Vertical Plane, Dynamics of Circular Motion	00:28:20
246	19	19.Motion of Body Outside the Spherical Surface 1 Learning Dynamics of Circular Motion of a Body Outside A Spherical Surface with Various Illustrations	00:18:41
247	20	20.Motion of Body Outside the Spherical Surface 2 Learning Dynamics of Circular Motion of a Body Outside A Spherical Surface with Various Illustrations	00:21:35
248	21	21.Some Special Cases of Circular Motion 1 Circular Motion in Non-Inertial Frame of Reference, Motion in Inclined Plane, Illustrations	00:26:23
249	22	22.Some Special Cases of Circular Motion 2 Circular Motion in Non-Inertial Frame of Reference, Motion in Inclined Plane, Illustrations	00:11:48
		Chapter 09 TOTAL · 22 lectures	**09:02:40**

Chapter 09 | Circular Motion - Miscellaneous Problems

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
250	1	Illustration-1 Problem Solving	00:05:26
251	2	Illustration-2 Problem Solving	00:11:12
252	3	Illustration-3 Problem Solving	00:09:34
253	4	Illustration-4 Problem Solving	00:08:24
254	5	Illustration-5 Problem Solving	00:10:53
255	6	Illustration-6 Problem Solving	00:06:24
256	7	Illustration-7 Problem Solving	00:12:55
257	8	Illustration-8 Problem Solving	00:16:06
258	9	Illustration-9 Problem Solving	00:07:21
259	10	Illustration-10 Problem Solving	00:09:56
260	11	Illustration-11 Problem Solving	00:03:03
261	12	Illustration-12 Problem Solving	00:09:40
262	13	Illustration-13 Problem Solving	00:08:03

Chapter 09 | Circular Motion - Miscellaneous Problems · CONTINUED

#	SEC. #	LECTURE / TOPIC · DISCUSSION	DURATION
263	14	Illustration-14 Problem Solving	00:08:45
264	15	Illustration-15 Problem Solving	00:10:55
265	16	Illustration-16 Problem Solving	00:11:20
		Chapter 09 TOTAL · 16 lectures	02:29:57