



Chapter 1 : Introduction of Mechanisms and Machines 1-1 to 1-57

Syllabus :

Concepts of Kinematics and Dynamics, Mechanisms and Machines, Planar and Spatial Mechanisms, Kinematic Pairs, Kinematic Chains, Kinematic Diagrams, Kinematic Inversion, Four Bar Chain and Slider Crank Mechanisms and their Inversions, Degrees of Freedom, Mobility and range of movement - Kutzbach and Grubler's criterion, Number Synthesis, Grashof's criterion, Straight Line Mechanisms

| | | |
|--------|---|--------|
| 1.1 | Introduction | 1 - 1 |
| 1.2 | Kinematic Link or Element | 1 - 1 |
| 1.2.1 | Types of Links | 1 - 2 |
| 1.2.2 | Types of Rigid Links | 1 - 2 |
| 1.3 | Machine | 1 - 3 |
| 1.4 | Structure..... | 1 - 4 |
| 1.4.1 | Difference between a Structure and Machine | 1 - 4 |
| 1.5 | Types of Constrained Motions | 1 - 4 |
| 1.6 | Kinematic Pair | 1 - 5 |
| 1.6.1 | Types of Kinematic Pairs | 1 - 6 |
| 1.6.2 | Classification According to the Nature of Relative Motion Between the Links | 1 - 6 |
| 1.6.3 | Classification According to the Nature of Contact Between the Links | 1 - 7 |
| 1.6.4 | Classification According to the Mechanical Arrangement..... | 1 - 8 |
| 1.7 | Kinematic Chain | 1 - 8 |
| 1.8 | Types of Joints in a Kinematic Chain | 1 - 9 |
| 1.8.1 | Difference between Binary Link and Binary Joint | 1 - 10 |
| 1.9 | Types of Kinematic Chain..... | 1 - 10 |
| 1.10 | Mechanism..... | 1 - 11 |
| 1.10.1 | Difference between Mechanism and a Machine..... | 1 - 11 |
| 1.11 | Inversion of a Kinematic Chain | 1 - 11 |
| 1.11.1 | Inversions of Four Bar Kinematic Chain..... | 1 - 12 |
| 1.11.2 | Inversions of Single Slider Kinematic Chain..... | 1 - 14 |
| 1.11.3 | Inversions of Double Slider Kinematic Chain | 1 - 18 |
| 1.12 | Grashof's Law | 1 - 22 |
| 1.12.1 | Class - I Four Bar Linkage ($s + l < p + q$) | 1 - 23 |
| 1.12.2 | Class - II Four Bar Linkage ($s + l > p + q$) | 1 - 24 |
| 1.12.3 | Special Cases of Four Bar Linkage ($s + l = p + q$)...1 - 24 | |

| | | |
|--------|---|--------|
| 1.13 | Degree of Freedom (DOF) | 1 - 27 |
| 1.14 | Mobility and Degree of Freedom (DOF)..... | 1 - 28 |
| 1.15 | Kutzbach Criterion..... | 1 - 28 |
| 1.16 | Grubler's Criterion | 1 - 29 |
| 1.16.1 | Application of Grubler's Criterion | 1 - 30 |
| 1.16.2 | Minimum Number of Links in Planar Mechanism | 1 - 32 |
| 1.16.3 | Important Conclusion from Grubler's Criteria | 1 - 33 |
| 1.16.4 | Limitations of Grubler's Criteria | 1 - 33 |
| 1.17 | Straight Line Generating Mechanisms..... | 1 - 41 |
| 1.17.1 | Exact Straight Line Generating Mechanisms | 1 - 41 |
| 1.17.2 | Approximate Straight Line Generating Mechanisms .1 - 44 | |

Chapter 2 : Graphical & Analytical Linkage Synthesis 2-1 to 2-27

Syllabus :

Synthesis, Function, Path, and Motion Generation, Dimensional synthesis (Graphical): Two position synthesis, Three Position synthesis, Coupler curves, Position Analysis : Graphical position analysis of linkages, Algebraic position analysis of linkages, Four bar slider crank position solution, Two position motion generated by analytical synthesis, Three position motion generated by analytical synthesis.

| | | |
|---------|---|-------|
| 2.1 | Introduction | 2 - 1 |
| 2.1.1 | Type Synthesis..... | 2 - 1 |
| 2.1.2 | Number Synthesis..... | 2 - 1 |
| 2.1.3 | Dimensional Synthesis | 2 - 1 |
| 2.2 | Classification of Synthesis Problems (Tasks of Kinematic Synthesis) | 2 - 1 |
| 2.2.1 | Function Generation..... | 2 - 1 |
| 2.2.2 | Path Generation | 2 - 2 |
| 2.2.3 | Body Guidance (Motion Generation) | 2 - 2 |
| 2.3 | Dimensional Synthesis | 2 - 2 |
| 2.3.1 | Dimensional Synthesis by Inversion Method..... | 2 - 2 |
| 2.3.1.1 | Two-position Synthesis of Four Bar Chain Mechanism by Inversion Method | 2 - 2 |
| 2.3.1.2 | Three - position Synthesis for Four Bar Chain Mechanism by Inversion Method | 2 - 3 |
| 2.3.1.3 | Four Position Synthesis for Four Bar Chain Mechanism by Inversion Method | 2 - 5 |
| 2.3.1.4 | Two-position Synthesis for Slider | |



| | |
|--|--|
| <p>Crank Mechanism by Inversion Method..... 2 - 6</p> <p>2.3.1.5 Three-position Synthesis for Slider</p> <p>Crank Mechanism by Inversion Method..... 2 - 6</p> <p>2.3.2 Dimensional Synthesis by Relative Pole Method 2 - 7</p> <p>2.3.2.1 Two Position Synthesis of Four Bar</p> <p>Chain Mechanism by Relative Pole Method..... 2 - 8</p> <p>2.3.2.2 Three Position Synthesis of Four Bar</p> <p>Chain Mechanism by Relative Pole Method..... 2 - 9</p> <p>2.3.2.3 Two Position Synthesis of Slider</p> <p>Crank Mechanism by Relative Pole Method 2 - 9</p> <p>2.3.2.4 Three Position Synthesis of Slider</p> <p>Crank Mechanism by Relative Pole Method2 - 10</p> <p>2.4 Analytical Method for Dimensional Synthesis of Four Bar</p> <p>Chain Mechanism (Freudenstein's Equation)2 - 10</p> <p>2.5 Synthesis of a Function Generation.....2 - 11</p> <p>2.5.1 Chebyshev Spacing Method.....2 - 12</p> <p>2.6 Synthesis of Path Generation or Coupler</p> <p>Curve Synthesis2 - 23</p> <p>2.7 Analytical Motion Synthesis2 - 24</p> <p>2.7.1 Two Position Motion Synthesis by</p> <p>Analytical Method.....2 - 24</p> <p>2.7.2 Three Position Motion Synthesis by</p> <p>Analytical Method.....2 - 25</p> | <p>3.6 Mechanical Advantage3 - 4</p> <p>3.7 Applications of the Relative Velocity Method3 - 4</p> <p>3.8 Acceleration Analysis by Relative Velocity Method...3 - 13</p> <p>3.9 Linear and Angular Acceleration..... 3 - 13</p> <p>3.10 Motion of a Particle Moving in a Circular Path3 - 14</p> <p>3.10.1 Tangential Acceleration, f^t3 - 14</p> <p>3.10.2 Centripetal Acceleration, f^c 3 - 15</p> <p>3.10.3 Total Acceleration, f.....3 - 15</p> <p>3.11 Acceleration Diagram of a Link by</p> <p>Relative Acceleration Method..... 3 - 15</p> <p>3.12 Outline Procedure of Drawing the Acceleration</p> <p>Diagram of a Mechanism.....3 - 15</p> <p>3.13 Coriolis Component of Acceleration..... 3 - 31</p> <p>3.13.1 Magnitude of Coriolis Component of Acceleration3 - 32</p> <p>3.13.2 Method of Finding the Direction of</p> <p>Coriolis Component..... 3 - 32</p> <p>3.14 Klein's Construction..... 3 - 44</p> <p>3.14.1 Klein's Construction when Crank is Rotating with</p> <p>Uniform Angular Velocity..... 3 - 44</p> <p>3.14.2 Klein's Construction when Crank is Rotating with Non</p> <p>Uniform Angular Velocity..... 3 - 46</p> <p>3.15 Analytical Method.....3 - 54</p> <p>3.16 Velocity Analysis by Instantaneous</p> <p>Center Method 3 - 61</p> <p>3.16.1 Velocity of a Point on a Link by Instantaneous</p> <p>Center Method 3 - 62</p> <p>3.16.2 Number of Instantaneous Centers in a Mechanism ..3 - 62</p> <p>3.16.3 Location of Instantaneous Centers by Inspection3 - 62</p> <p>3.16.4 Types of Instantaneous Centers.....3 - 63</p> <p>3.16.5 Properties of the Instantaneous Center 3 - 63</p> <p>3.16.6 Centrodes3 - 63</p> <p>3.17 Three Centers in Line Theorem</p> <p>(Aronhold - Kennedy's Theorem).....3 - 64</p> <p>3.18 Steps to Locate Instantaneous Centers.....3 - 65</p> <p>3.19 Angular Velocity Ratio Theorem 3 - 66</p> |
|--|--|

Chapter 3 : Velocity and Acceleration Analysis
3-1 to 3-81

Syllabus :

Graphical and analytical velocity analysis of four bar pin jointed linkages and four bar slider crank linkages, Instant centers of velocity, Graphical and analytical acceleration analysis of four bar pin jointed linkages and four bar slider crank linkages, Graphical velocity and acceleration analysis of quick return mechanisms.

| | |
|---|---|
| <p>3.1 Introduction 3 - 1</p> <p>3.2 Linear and Angular Velocity..... 3 - 1</p> <p>3.3 Representation of Velocity by Vectors 3 - 2</p> <p>3.4 Velocity Analysis by Relative Velocity Method..... 3 - 2</p> <p>3.4.1 Relative Velocity of Two Bodies having their</p> <p>Absolute Motions..... 3 - 2</p> <p>3.4.2 Velocity Diagram of a Rigid Link..... 3 - 3</p> <p>3.5 Rubbing Velocity at a Pin Joint 3 - 4</p> | <p>Chapter 4 : Cams 4-1 to 4-38</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Syllabus :</p> <p>Types of cams, Types of followers, Follower displacement programming, Derivatives of follower Motion, Motions of follower, Layout of cam profiles.</p> </div> |
|---|---|



| | | | | | |
|-------|---|--------|--------|---|--------|
| 4.1 | Introduction | 4 - 1 | 5.9.2 | Length of Cross Belt Drive..... | 5 - 8 |
| 4.2 | Classification of Followers | 4 - 1 | 5.10 | Angle of Contact or Angle of Lap..... | 5 - 9 |
| 4.3 | Classification of Cams | 4 - 2 | 5.11 | Limiting Tension Ratio..... | 5 - 9 |
| 4.3.1 | Classification of Cam According Types of Shape..... | 4 - 2 | 5.12 | Limiting Tension Ratio in V-belt or Rope..... | 5 - 11 |
| 4.3.2 | Classification of Cam According to Type of Follower Movement | 4 - 4 | 5.13 | Centrifugal Tension in Belt | 5 - 13 |
| 4.3.3 | Classification of Cam According to Type of Constraint of the Follower..... | 4 - 5 | 5.14 | Stress Induced in Belt | 5 - 14 |
| 4.4 | Terminology and Definitions | 4 - 6 | 5.15 | Power Transmitted by Belt | 5 - 14 |
| 4.5 | Types of Motions of the Follower | 4 - 7 | 5.16 | Maximum Power Transmitted by Belt | 5 - 17 |
| 4.6 | Motion of Follower with Uniform Velocity | 4 - 7 | 5.17 | Initial Tension in the Belt | 5 - 20 |
| 4.7 | Motion of Follower with Simple Harmonic Motion..... | 4 - 8 | 5.18 | Rope Drive | 5 - 26 |
| 4.7.1 | Method of Drawing the Displacement Diagram | 4 - 8 | 5.18.1 | Types of Rope Drives..... | 5 - 26 |
| 4.8 | Motion of Follower with Uniform Acceleration and Retardation..... | 4 - 9 | 5.18.2 | Advantages and Limitations of Rope Drives over Other Drives | 5 - 26 |
| 4.9 | Motion of Follower with Cycloidal Motion | 4 - 10 | 5.19 | Chain Drive | 5 - 27 |
| 4.10 | Layout of Cam Profile for a given Follower Motions .. | 4 - 12 | 5.20 | Advantages and Disadvantages of Chain Drive over Belt or Rope Drive..... | 5 - 28 |

Chapter 5 : Belt, Ropes & Chains 5-1 to 5-35

Syllabus :

Types of Belt Drive, Velocity Ratio, Slip, Pulley Arrangement, Length of Belt, Law of Belting, Ratio of Friction Tension, Power Transmitted, Centrifugal Effects on Belts, Maximum Power Transmitted, Creep, Chains, Chain Length, Angular Speed Ratio, Classification of Chain

| | | |
|-------|--|-------|
| 5.1 | Introduction to Belt and Rope Drive | 5 - 1 |
| 5.2 | Types of Belts..... | 5 - 1 |
| 5.2.1 | Materials used for Belt and Rope Drives..... | 5 - 2 |
| 5.2.2 | Selection of Belt Drive | 5 - 2 |
| 5.3 | Types of Belt Drives | 5 - 2 |
| 5.4 | Crowning of Pulley | 5 - 3 |
| 5.5 | Law of Belting..... | 5 - 4 |
| 5.6 | Velocity Ratio of Belt Drive | 5 - 4 |
| 5.6.1 | Velocity Ratio of Open Belt Drive..... | 5 - 4 |
| 5.6.2 | Velocity Ratio of Compound Belt Drive | 5 - 4 |
| 5.7 | Slip of Belt..... | 5 - 5 |
| 5.8 | Creep of Belt | 5 - 6 |
| 5.9 | Length of Belt | 5 - 7 |
| 5.9.1 | Length of an Open Belt Drive | 5 - 7 |

Chapter 6 : Friction, Clutch and Brake 6-1 to 6-69

Syllabus :

Introduction to Friction, Law of Friction, Coefficient of Friction, Inclined Plane, Pivot and Collars, Friction Clutches, Rolling Friction, Types of Brakes, Block and Shoe Brakes, Differential Band Brake, Internal expanding Shoe Brake, Braking Effect in Vehicle.

| | | |
|-------|---|-------|
| 6.1 | Introduction to Friction..... | 6 - 1 |
| 6.2 | Types of Friction..... | 6 - 1 |
| 6.3 | Laws of Dry Friction..... | 6 - 1 |
| 6.4 | Limiting Angle of Friction | 6 - 2 |
| 6.5 | Angle of Repose | 6 - 2 |
| 6.6 | Inclined Plane Theory | 6 - 3 |
| 6.6.1 | Considering Motion of Body Upwards | 6 - 3 |
| 6.6.2 | Consideration Motion of Body Downward | 6 - 4 |
| 6.7 | Introduction to Pivot and Collar Friction | 6 - 5 |
| 6.8 | Clutch..... | 6 - 6 |



| | | |
|----------|---|--------|
| 6.9 | Classification of Clutches..... | 6 - 6 |
| 6.9.1 | Single Plate Clutch (Dry Clutch) | 6 - 7 |
| 6.9.2 | Multiplate Clutch..... | 6 - 9 |
| 6.9.3 | Cone Clutch | 6 - 20 |
| 6.9.4 | Centrifugal Clutch | 6 - 24 |
| 6.10 | Introduction to Brakes..... | 6 - 28 |
| 6.10.1 | General Requirements of a Good Braking System ... | 6 - 28 |
| 6.10.2 | General Requirements of a Good Brake | |
| | Lining Material | 6 - 28 |
| 6.11 | Classification of Brakes | 6 - 28 |
| 6.12 | Block or Shoe Brakes | 6 - 29 |
| 6.12.1 | Single Block or Shoe Brake | 6 - 29 |
| 6.12.1.1 | Self-Locking and Self-Energizing of Brakes | 6 - 31 |
| 6.12.2 | Pivoted Block Brake ($2\theta > 60^\circ$)..... | 6 - 31 |
| 6.12.3 | Double Block or Shoe Brake..... | 6 - 32 |
| 6.13 | Band Brakes..... | 6 - 37 |
| 6.13.1 | Simple Band Brake..... | 6 - 37 |
| 6.13.2 | Differential Band Brake..... | 6 - 38 |
| 6.13.2.1 | Self-locking and Self-energizing of Differential | |
| | Band Brake | 6 - 39 |
| 6.14 | Band and Block Brake | 6 - 45 |
| 6.15 | Internal Expanding Shoe Brake | 6 - 51 |
| 6.15.1 | Braking Torque of an Internal Expanding | |
| | Shoe Brake | 6 - 52 |
| 6.16 | Braking of a Vehicle..... | 6 - 54 |
| 6.17 | Hydraulic Brakes | 6 - 57 |
| 6.17.1 | Construction | 6 - 57 |
| 6.17.2 | Working Principle | 6 - 57 |
| 6.17.3 | Advantages of Hydraulic Brake System..... | 6 - 58 |
| 6.17.4 | Disadvantages of Hydraulic Brake System | 6 - 58 |
| 6.18 | Disc Brakes | 6 - 58 |
| 6.19 | Pneumatic (Air) Brakes..... | 6 - 59 |
| 6.19.1 | Working Principle | 6 - 59 |
| 6.20 | Vacuum Brakes | 6 - 59 |
| 6.21 | Dynamometers | 6 - 60 |
| 6.22 | Types of Dynamometer | 6 - 60 |
| 6.22.1 | Absorption Dynamometer | 6 - 60 |
| 6.22.1.1 | Prony Brake Dynamometer | 6 - 60 |
| 6.22.1.2 | Rope Brake Dynamometer | 6 - 61 |

| | | |
|----------|------------------------------------|--------|
| 6.22.2 | Transmission Dynamometers | 6 - 63 |
| 6.22.2.1 | Belt Transmission Dynamometer..... | 6 - 63 |
| 6.22.2.2 | Epicyclic Train Dynamometer | 6 - 65 |
| 6.22.2.3 | Torsion Dynamometer..... | 6 - 65 |

Chapter 7 : Gears and Gear Trains 7-1 to 7- 103

Syllabus :

Terminology, Law of Gearing, Characteristics of involute and cycloidal action, Interference and undercutting, centre distance variation, minimum number of teeth, contact ratio, spur, helical, spiral bevel and worm gears, problems.

Gear Trains: Synthesis of simple, compound & reverted gear trains, Analysis of epicyclic gear trains.

| | | |
|--------|--|--------|
| 7.1 | Introduction | 7 - 1 |
| 7.2 | History of Gears | 7 - 1 |
| 7.3 | Advantages and Disadvantages of Gear Drive | 7 - 2 |
| 7.4 | Classification of Gears | 7 - 2 |
| 7.4.1 | Spur Gears..... | 7 - 3 |
| 7.4.2 | Helical Gears..... | 7 - 3 |
| 7.4.3 | Rack and Pinion | 7 - 4 |
| 7.4.4 | Bevel Gears | 7 - 4 |
| 7.4.5 | Spiral Gears | 7 - 6 |
| 7.4.6 | Worm and Worm Wheel | 7 - 6 |
| 7.5 | Comparison of Gears | 7 - 8 |
| 7.6 | Gear Tooth Terminology..... | 7 - 9 |
| 7.7 | Law of Gearing (Condition for Constant Velocity | |
| | Ratio) | 7 - 10 |
| 7.8 | Velocity of Sliding of Teeth | 7 - 11 |
| 7.9 | Conjugate Profile..... | 7 - 11 |
| 7.10 | Forms of Gear Tooth Profile | 7 - 11 |
| 7.10.1 | Cycloidal Profile | 7 - 11 |
| 7.10.2 | Involute Profile | 7 - 12 |
| 7.11 | Comparison of Cycloidal and Involute | |
| | Tooth Gears | 7 - 13 |
| 7.12 | Standard Tooth Profiles or Systems | 7 - 13 |
| 7.13 | Length of Path of Contact..... | 7 - 14 |
| 7.14 | Length of Arc of Contact..... | 7 - 15 |
| 7.15 | Contact Ratio or Number of Pairs of Teeth in | |
| | Contact | 7 - 16 |
| 7.16 | Interference in Involute Gears | 7 - 28 |
| 7.17 | Undercutting..... | 7 - 29 |



| | | | |
|--------|---|--------|--|
| 7.18 | Critical or Minimum Number of Teeth to Avoid Interference.....7 - 29 | 7.36 | Terminology of Worm.....7 - 58 |
| 7.18.1 | Minimum Number of Teeth on Pinion to Avoid Interference with Wheel.....7 - 29 | 7.37 | Velocity Ratio and Center Distance between Worm Gears.....7 - 58 |
| 7.18.2 | Minimum Number of Teeth on Pinion to Avoid Interference with Rack.....7 - 30 | 7.38 | Efficiency of Worm Gearing.....7 - 59 |
| 7.19 | Methods to Avoid Interference.....7 - 31 | 7.39 | Introduction of Straight Bevel Gears.....7 - 61 |
| 7.19.1 | Modified Profile of Tooth.....7 - 31 | 7.40 | Terminology of Bevel Gear.....7 - 62 |
| 7.19.2 | Modified Addendum of Pinion and Wheel.....7 - 31 | 7.41 | Pitch Cone Angles and its Geometrical Relationship.....7 - 62 |
| 7.19.3 | Modified Center Distance between Pinion and Wheel.....7 - 32 | 7.42 | Force Analysis of bevel Gears.....7 - 63 |
| 7.20 | Effect of Center Distance Variation on Velocity Ratio.....7 - 32 | 7.43 | Introduction of Gear Train.....7 - 65 |
| 7.21 | Rack Shift.....7 - 33 | 7.44 | Simple Gear Train.....7 - 65 |
| 7.22 | Fouling (Interference in Internal Gears).....7 - 34 | 7.45 | Compound Gear Train.....7 - 66 |
| 7.23 | Friction between Gear Teeth.....7 - 34 | 7.46 | Reverted Gear Train.....7 - 67 |
| 7.24 | Introduction of Helical Gear.....7 - 44 | 7.47 | Design of Spur Gear Trains.....7 - 67 |
| 7.25 | Terminology of Helical Gear.....7 - 45 | 7.48 | Epicyclic Gear Train.....7 - 71 |
| 7.26 | Virtual Number of Teeth or Number of Teeth on Equivalent Spur Gear.....7 - 45 | 7.49 | Method of Finding Velocity Ratio of an Epicyclic Gear Train.....7 - 72 |
| 7.27 | Force Analysis of Helical Gear.....7 - 46 | 7.50 | Epicyclic Gear Train with Bevel Gears.....7 - 73 |
| 7.28 | Velocity Ratio of Helical Gears.....7 - 47 | 7.51 | Torque and Tooth Load in Epicyclic Gear Train.....7 - 83 |
| 7.29 | Centre Distance of Helical Gears.....7 - 47 | 7.52 | Types of Gear Box.....7 - 89 |
| 7.30 | Introduction of Spiral Gears.....7 - 51 | 7.52.1 | Sliding Mesh Type Gear Box.....7 - 89 |
| 7.31 | Shaft Angle of Spiral Gears.....7 - 51 | 7.52.2 | Constant Mesh Gear Box.....7 - 90 |
| 7.32 | Velocity of Sliding between Spiral Gears.....7 - 52 | 7.52.3 | Epicyclic Gear Box.....7 - 90 |
| 7.33 | Center Distance between Two Spiral Gears.....7 - 52 | 7.52.4 | Synchromesh Gear Box.....7 - 91 |
| 7.34 | Efficiency of Spiral Gears.....7 - 52 | 7.52.5 | Differential Gear Box.....7 - 92 |
| 7.35 | Introduction of Worm and Worm Gear.....7 - 57 | 7.52.6 | Humpage Gear Box (Epicyclic Gear Train with Bevel Gears).....7 - 93 |

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