



## 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

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### 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.

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**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.

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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

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## 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.

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