

## 2.8 30263 THEORY OF MACHINES

### UNIT-1 SIMPLE MECHANISMS

- 1.1.1 Introduction
- 1.1.2 Resistant Body
- 1.1.3 Link [Element]
- 1.1.4 Classification of link or element
- 1.1.5 Machine versus structure
- 1.1.6 Kinematic pair
- 1.1.7 Classification of kinematic pairs
- 1.1.8 Kinematic chain
- 1.1.9 Relation between numbers of links and pairs
- 1.1.10 Types of joints in chain
- 1.1.11 The A.W Klein may use the relation between the joint link and higher pair
- 1.1.12 Number of degree of freedom far plane mechanism
- 1.1.13 Inversion of a mechanism
- 1.1.14 Classification of inversion of a mechanism of kinematic chain
- 1.1.15 Mechanical advantages of a linkage
- 1.1.16 Cams

### UNIT-2 FRICTION

- 2.1 Introduction
- 2.2 Definition
- 2.3 Necessity of friction
- 2.4 Fundamental laws of sliding friction
- 2.5 Angle of friction (limiting)
- 2.6 Angle of repose
- 2.7 Minimum force required to move a body on a horizontal surface
- 2.8 Horizontal force required to move a body on an inclined plane on upward condition
- 2.9 The body moving downwards on an inclined plane
- 2.10 Frictional torque in screws for square threads and V-Threads
- 2.11 Frictional torque in square screws threads
- 2.12 Screw jack with V-Threads
- 2.13 Classification of bearing
- 2.14 Friction in journal bearing
- 2.15 Friction in pivot and collar
- 2.16 flat pivot and collar
- 2.17 The clutch

### UNIT-3 TRANSMISSION

- 3.1 Introduction
- 3.2 Transmission-Screw
- 3.3 Flat and V-Belt drive

- 3.4 Effect of slip on Velocity Ratio
- 3.5 Compound belt drive
- 3.6 Length of belt for open belt drive
- 3.7 Length of belt in a cross belt driven
- 3.8 Ratio of driving tensions for flat belts
- 3.9 Ratio of driving tension V belt or rope
- 3.10 Advantages of flat belt drives
- 3.11 Advantages and disadvantages of V-belt drive over flat belt drive
- 3.12 Power – transmitted by a belt
- 3.13 Centrifugal tension
- 3.14 Maximum power transmitted by a belt
- 3.15 Initial tension in the belt
- 3.16 Chains drive
- 3.17 Gears
- 3.18 Terminology used in gears
- 3.19 Forms of teeth
- 3.20 Gear trains
- 3.21 Law of gearing

#### **UNIT-4 FLYWHEEL**

- 4.1 Introduction
- 4.2 Flywheel
- 4.3 Turning moment diagram for a single cylinder double acting steam engine
- 4.4 Turning moment diagram for a four stroke cycle internal combustion engine
- 4.5 Fluctuation of energy and coefficient of fluctuation of energy
- 4.6 Coefficient of fluctuation of speed
- 4.7 Energy stored in fly wheel

#### **UNIT-5 GOVERNOR**

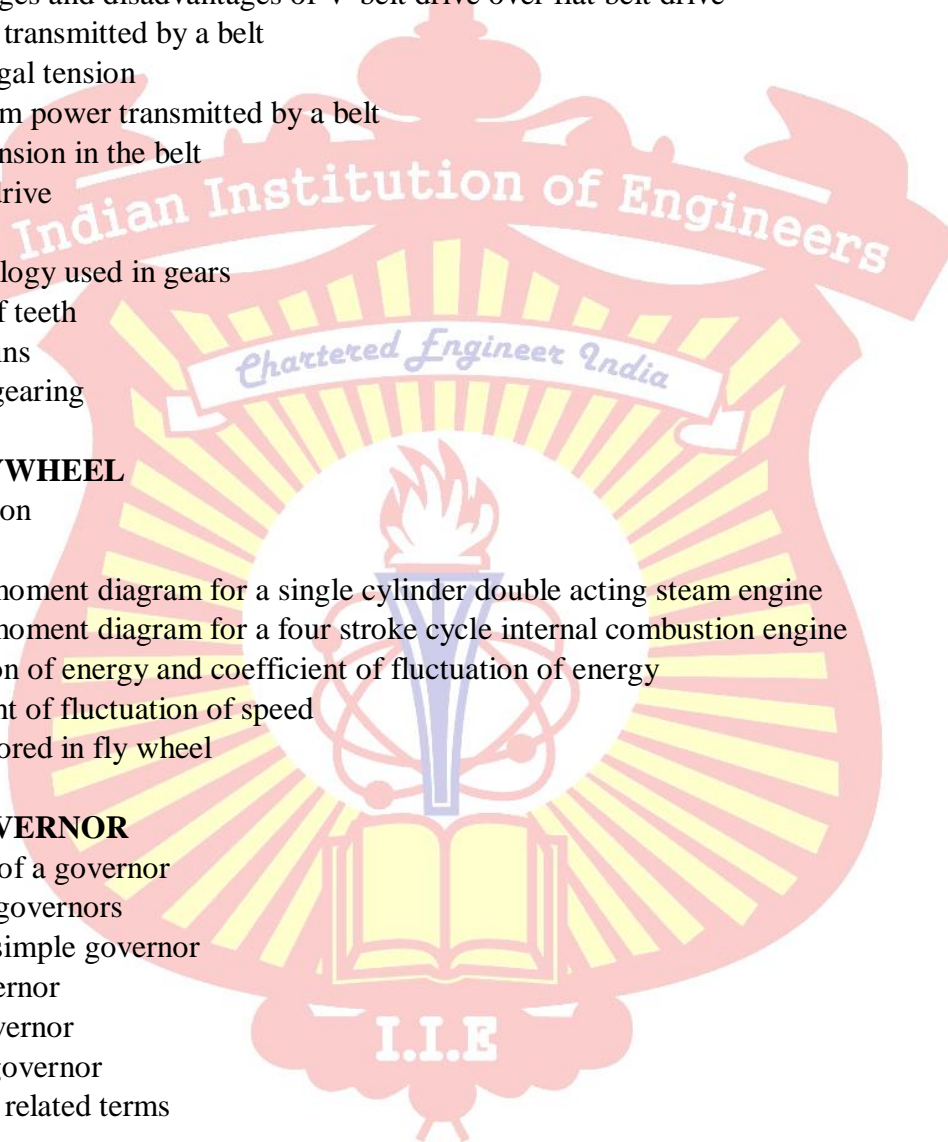
- 5.1 Principle of a governor
- 5.2 Types of governors
- 5.3 Study of simple governor
- 5.4 Watt governor
- 5.5 Porter governor
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- 5.7 Governor related terms

#### **UNIT-6 BALANCING**

- 6.1 Introduction
- 6.2 Types of balancing

#### **UNIT-7 MECHANICAL VIBRATION**

- 7.1 Introduction



- 7.2 types of vibrations
- 7.3 Harmful effects of vibrations
- 7.4 Remedies of vibrations

**Reference Book:** Theory of Machines by B.S. Ubhi

