



## Automobile Mechanics and IC Engines

### **Introduction**

- What is an automobile?
- Brief history.
- Changes over the years.
- Indian automobile industry.

### **Chassis design**

#### *Brief terminology –*

- Multi point strut bar.
- Fender bar.
- Anti-roll bar.

#### *Types of chassis –*

- Ladder frame chassis.
- Tubular space frame chassis.
- Monocoque frame chassis.
- Ulsabmonocoque.
- Backbone frame chassis.
- Aluminium space frame.
- Carbon fibremonocoque.



## **Suspension Unit**

*Brief terminology –*

- Weight Transfer
- Jacking forces
- Camber and Caster angle
- Spring Rate

**Types of suspensions –**

- Dependent suspension
- Independent suspension

## **Steering System**

- Ackerman Steering Principle
- Steering Mechanisms
  1. Rack and Pinion
  2. Recirculating Ball Type
  3. Worm and Sector
- Understeer, Oversteer
- Power Steering

## **Transmission system**

- Flywheel
- Clutch
  1. Single Plate Clutch
  2. Multi Plate Clutch
  3. Cone Clutch
  4. Centrifugal Clutch
  5. Electromagnetic



- Gearbox
  1. Constant mesh type
  2. Synchromesh type
  3. Sliding mesh type
- Reverse and its working
- Types of Transmission
  1. Manual
  2. Semi-Automatic
  3. Automatic
  4. CVT
- Differential
- 2WD, 4WD, AWD

### **Braking Unit**

- Disc Brakes
- Drum Brakes
- Magnetic Brakes
- Vacuum Brakes
- Anti-lock braking System
- Brake Actuators
  1. Cable operated
  2. Solid Bar connection
  3. Single-circuit hydraulic
  4. Dual-circuit hydraulic
- Power Brakes



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- Brake Fluids

### **Fuel Supply System**

- Fuel Filter
- Carburettor
- Fuel Injector
- Spark Plug

### **IC Engine**

- Types of IC Engine
- 4-Stroke Engine
- 2-Stroke Engine
- Engine Layout and working
- Valves and Valve Timing
- Engine Cooling
- Turbochargers
- Superchargers
- Latest Technologies

1. PGMFi 2. MPFi 3. CRDi