

# AMM-21 I.C. ENGINES & AUTOMOBILE ENGINEERING

## UNIT-1

- 1.1 Historical Developments and modern trends in I.C. Engines
- 1.2 Engine Components
- 1.3 Engine classification
- 1.4 Fuel-air cycle analysis
- 1.5 Comparison of P-V Diagram of air-standard cycles
- 1.6 Fuel-air cycle and actual cycle
- 1.7 Effect of variables on performance

## UNIT-2

- 2.1 Carburetion, Mixture requirements, Carburetor types
- 2.2 Construction and Working of fuel pump and fuel injector,
- 2.3 Types of fuel injectors
- 2.4 Fuel distribution systems
- 2.5 M.P.F.I. system for modern automobile engines

## UNIT-3

- 3.1 Ignition system: Battery and coil ignition system, Magneto ignition system, Electronic ignition system, Advantage over mechanical contact breaker point system
- 3.2 Engine Cooling system: Air Cooling, Water cooling, Thermostatic Radiators
- 3.3 Lubrication system: Dry sump Lubrication, Wet sump lubrication
- 3.4 Fully pressurized, oil filters
- 3.5 Governing system: Quality governing, Quantity governing, Hit & Miss governing

## UNIT-4

- 4.1 Testing & Performance of I.C. Engine: Determination of brake power, indicated power, friction power.
- 4.2 Determination of brake thermal efficiency, mechanical efficiency, volumetric efficiency.
- 4.3 Energy Balance. Performance characteristics. Supercharging & Turbo charging methods and limitations. (Only descriptive treatment)

## UNIT-5

- 5.1 Combustion in S.I. Engines: a. Stages of Combustion. Concept of combustion quality
- 5.2 Effect of engine variable on ignition lag and flame propagation.
- 5.3 Abnormal Combustion: Theories, effects and controlling measures, Combustion chambers for S.I. engines
- 5.4 Combustion in C.I. Engines: a. Stages of Combustion b. Diesel knock and its control c. Combustion chambers for C.I. engines

## UNIT-6

1. Standards for emission of pollutants from motor vehicles as per CMV rules

2. PUC norms requirements for automotive applications
3. Hybrid vehicles

**Reference books:**

1. The Repair of Vehicle Bodies by Andrew Livesey
2. Automotive Master Technician , Advanced Light Vehicle Technology by Graham Stoakes
3. Principles of Vibration Analysis with Applications in Automotive Engineering by C. Q. Liu  
Ronald L. Huston

