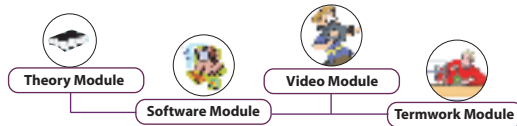


Thermal Engineering



System Requirement:- IBM-PC Compatible with Window-OS, 128 MB RAM/Multimedia Kit

Theory module

Features : Theory, Figures, Photographs, Animations with controller, Highlighter tool, Note creation facility, Systematic page navigation, Printing facility, Access to Videos at appropriate locations.

List of Topics

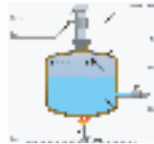
Sources of Energies



Introduction
Conventional Energy Sources
Non - Conventional Energy Sources.

Constructional Features of Automobile and Engine Components

Basic Concept of Pure Substance system and types of System, Properties and State of System, Principle of Conservation of Energy, First Law of Thermodynamics, Steady Flow Energy Equation and Its Application, Second Law of Thermodynamics, Equivalence of Kelvin Plank and Clausius Statement, Concept of Perpetual Motion Machine, Application of Second Law, Heat Pump.



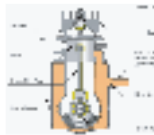
Ideal Gases



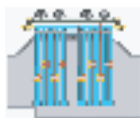
Introduction Concept of Ideal Gas Charle's Law, Boyle's Law, Avogadro's Law, Characteristics of Gas Constant, Various Gas Processes - Isobaric Process, Isochoric Process, Isothermal Process, Adiabatic Process, Polytropic Process.

I.C. Engine and Testing

Heat Engine, Various Power Cycles - Carnot Cycle, Otto Cycle, Diesel Cycle, Dual Cycle, Classification of I. C. Engines, Four Stroke Spark Ignition Engine, Four stroke Compression Ignition Engine, Two Stroke Cycle Engine, Engine Powers, Measurement of Frictional Power: Motoring Test, Morse Test, Efficiencies of I. C. Engines, Heat Balance Sheet.

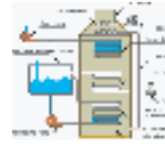


Steam Turbines and Condensers



Steam Nozzle and types, Applications of Nozzles, Steam Turbine, Types of Turbines, Compounding, Governing of Turbine, Steam Condensers, Functions of Condensers, Classification of Steam Condensers, Features of Condensers, Air Leakage in Condensers, Condenser Efficiency, Cooling Towers.

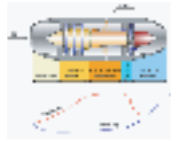
Steam and Steam Boilers



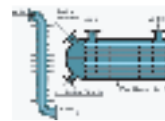
Concept of Pure Substance, Generation of Steam at Constant Pressure, Various Conditions of Steam, Properties of Steam, Use of Steam Table, Vapour Processes, Quality of Steam, Determination of Dryness Fraction, Steam Boiler, Types of Boilers, Boiler Mountings and Accessories, Safety Fittings, Control Fittings.

Gas Turbine

Introduction, Classification of Turbines, Constant Pressure Gas Turbine, Constant Volume Gas Turbine, Application of Gas Turbines, Turbo Jet Engine, Turbo Prop Engine, Ram Jet Engine, Rocket Jet Engine, Rocket Fuel.



Air Compressor



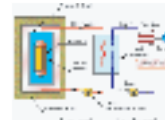
Introduction, Industrial Use of Compressed Air, Classification of Air Compressor, Single Stage Reciprocating Air Compressor, Two Stage Reciprocating Air Compressor, Compressor Efficiency, Multistaging of Air Compressor, Need of Multistage Compression, Advantages and Disadvantages of Multistaging.

Principles of Refrigeration

Introduction, Principle of Refrigeration, Types of Refrigeration, Concept of COP, Refrigeration Effect and Units of refrigeration, Reversed Carnot Cycle, Vapour Compression Cycle, Refrigerants, Applications of Refrigeration, Vapour Absorption Cycle, Electrolux Refrigeration.



Power Generation Systems



Introduction, General Layout of Thermal Power Plant, Gas Turbine Power Plant Classification of Gas Turbine Power Plant, Nuclear Power Plant, Elements of nuclear Power Plant, Nuclear Reactor, Types of Nuclear Reactor.

Software Module

Problems on Internal Energy, pressure of Gas, change in enthalpy and entropy, Problems on Heat added by steam, Problems on Pressure of steam and air, Vacuum efficiency of Condenser, Problems on thermal efficiency of the cycle, power developed by engine, Problems on Power required to drive the Compressor, Problems on Coefficient of Performance.



Video Module



Testing of I. C. Engines, Hydraulic Power Plant, Steam Turbines, Air Conditioners, Boilers, Air Compressors