Thermal Engineering

Chapter 1: Steam Generators

- 1.1 Types and Classification
- 1.2 Low Pressure Fire & Water Tube Boilers
- 1.3 Mountings & Accessories of Boilers
- 1.4 Performance Testing of Boilers
- 1.5 Equivalent Evaporation and Boiler Efficiency
- 1.6 Boiler Trial and Heat Boiler Sheet
- 1.7 Criteria for Selection of a Boiler and High-Pressure Boilers Introduction

Chapter 2: Steam Nozzles and Turbines

- 2.1 Expansion of Steam through Nozzle Types of Nozzles -Condition for Maximum Discharge
- 2.2 Critical Pressure Ratio and Effect of Friction
- 2.3 Super Saturated Flow
- 2.4 Stea<mark>m J</mark>et Pump
- 2.5 Introduction and Types of Steam Turbines
- 2.6 Compounding of Steam Turbine
- 2.7 Velocity Diagram for Moving Blade Impulse Turbine
- 2.8 Work Done, Power, and Efficiency of Impulse Steam Turbine
- 2.9 Velocity Diagram for Velocity Compounded Impulse Turbine (Multistaging)
- 2.10 Losses in Steam Turbines, Governing of Steam Turbines

Chapter 3: Internal Combustion Engines and Combustion

- 3.1 IC Engine
- 3.2 Ideal and Actual: Valve and Port Timing Diagrams

- 3.3 P-V Diagrams for Two Stroke, Four Stroke, SI and CI Engines and Comparison
- 3.4 Geometric, Operating, and Performance Comparison of SI and CI Engines
- 3.5 Desirable Properties and Qualities of Fuels
- 3.6 Air-Fuel Ratio Calculation Lean and Rich Mixtures
- 3.7 Combustion in SI and CI Engines Knocking Phenomena and Control

Chapter 4: Internal Combustion Engine Performance and Gas Turbines

- 4.1 Performance Parameters and Calculations
- 4.2 Morse and Heat Balance Tests
- 4.3 Fuel Injection System
- 4.4 Ignition System
- 4.5 Lubrication Systems
- 4.6 Cooling Systems
- 4.7 Sup<mark>erc</mark>harging
- 4.8 Turbocharging
- 4.9 Emission Norms

Chapter 5: Reciprocating Air Compressors

- 5.1 Classification of Reciprocating Air Compressors
- 5.2 With and Without Clearance of Reciprocating Compressors
- 5.3 Volumetric Efficiency, Isothermal Efficiency, and Isentropic Efficiency
- 5.4 Multistage Air Compressor with Intercooling
- 5.5 Rotary Compressors