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REFERENCE SYLLABUS

For

International Power Engineer (2nd Class)



INTERNATIONAL POWER ENGINEER (2ND CLASS)

SYLLABUS

Introduction

This Syllabus is intended to assist candidates studying for the International Power Engineer (2nd Class) Examination.

Recommended Study Program:

It is recommended that, before undertaking this examination, the candidate completes Power Engineering Course of study, offered through a recognized and approved technical institute or training provider which addresses the Syllabus Outline.



INTERNATIONAL POWER ENGINEER (2ND CLASS)

SYLLABUS

Reference Syllabus for International Power Engineer (2nd Class) Examination Candidates

Major Topic: Code Calculations and Legislation

Topic 1 A.S.M.E. Code Calculations - Cylindrical Components

Topic 2 ASME Code Calculations: Stayed Surfaces, Pressure Relief Valves and Furnaces

Topic 3 Boiler and Pressure Vessel Legislation

Topic 4 Plant Design and Installation

Topic 5 Management and Supervision

Topic 6 Plant Maintenance

Topic 7 Safety

Topic 8 Linear Motion

Topic 9 Angular Motion

Topic 10 Friction

Topic 11 Static and Dynamic Forces

Topic 12 Fluid Mechanics

Major Topic: Thermodynamics and Metallurgy

Topic 1 Heat, Expansion of Solids, and Heat Transfer

Topic 2 Thermodynamics of Gases

Topic 3 Thermodynamics of Steam

Topic 4 Practical Thermodynamic Cycles

Topic 5 Metallurgy

Topic 6 Testing of Metals

Topic 7 Corrosion of Metals

Topic 8 Introduction to Welding Symbols



INTERNATIONAL POWER ENGINEER (2ND CLASS)

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Major Topic: Boilers and Water Treatment

Topic 1 Boiler and Steam Generator Components and Design

Topic 2 Specialized Boiler Designs

Topic 3 Boiler and Steam Generator Operation

Topic 4 Boiler and Steam Generator Maintenance and Inspection

Topic 5 Pumps

Topic 6 Water Chemistry and Analysis

Topic 7 Water Pre-Treatment I

Topic 8 Water Pre-Treatment II

Topic 9 Internal Water Treatment

Topic 10 Non-Boiler Water Treatment

Major Topic: Prime Movers

Topic 1 Steam Turbine Theory and Construction

Topic 2 Steam Turbine Auxiliaries and Control

Topic 3 Steam Turbine Operation and Maintenance

Topic 4 Steam Condensers

Topic 5 Internal Combustion Engines: Components and Auxiliaries

Topic 6 Internal Combustion Engines: Operation and Maintenance

Topic 7 Gas Turbine Design and Auxiliaries

Topic 8 Gas Turbine Operation and Control

Topic 9 Lubrication

Topic 10 Piping

Topic 11 Mechanical Drawing



INTERNATIONAL POWER ENGINEER (2ND CLASS)

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Major Topic: Combustion and Plant Systems (344 pages)

- Topic 1 Power Plant Fuel Systems**
- Topic 2 Power Plant Water and Steam Systems**
- Topic 3 Measurement and Control Components**
- Topic 4 Control Instrumentation Systems**
- Topic 5 Fuels and Combustion Calculations**
- Topic 6 Firing and Draft Equipment**
- Topic 7 Combustion Control and Safeguards**
- Topic 8 Environmental Monitoring**
- Topic 9 Environmental Control Methods**

Major Topic: Electricity and Refrigeration

- Topic 1 Alternating Current Theory**
- Topic 2 Direct Current Machines**
- Topic 3 Alternating Current Generators**
- Topic 4 Alternating Current Motors**
- Topic 5 Transformers**
- Topic 6 Electrical System Protection**
- Topic 7 Air and Gas Compression**
- Topic 8 Refrigeration Systems and Equipment**
- Topic 9 Refrigeration Safety, Control, and Operation**
- Topic 10 Refrigeration Calculations**