REFERENCE SYLLABI

For

Refrigeration Plant Operator
Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator (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.
Reference Syllabus for Refrigeration Plant Operator (1st Class) Examination Candidates

**Topic 1 Legislation and Codes**  
**Topic 2 Introduction to Thermodynamics**  
**Topic 3 Thermodynamics of Refrigeration**  
**Topic 4 Introduction to Basic Mechanics**  
**Topic 5 Welding Methods and Inspection**  
**Topic 6 Welding Terms, Forge and Fusion Welding Processes**  
**Topic 7 Types of Pumps**  
**Topic 8 Pump Operation and Maintenance**  
**Topic 9 Introduction to Piping and Pipe Fittings**  
**Topic 10 Introduction to Valves**  
**Topic 11 Lubrication Principles**  
**Topic 12 Air Compression**  
**Topic 13 Fires and Extinguishing Media**  
**Topic 14 Portable Fire Extinguishers**  
**Topic 15 Building Safety**  
**Topic 16 First Aid and CPR for Adult Casualties**  
**Topic 17 Introduction to Electricity**  
**Topic 18 Refrigerants**  
**Topic 19 Environmental Impact of Chlorinated Hydrocarbons**  
**Topic 20 Compression Refrigeration Systems**  
**Topic 21 Absorption Refrigeration Systems**  
**Topic 22 Refrigeration Compressors**  
**Topic 23 Heat Exchangers for Refrigeration Systems**  
**Topic 24 Cooling Towers**  
**Topic 25 Refrigeration Metering Devices**  
**Topic 26 Refrigeration Accessories**  
**Topic 27 Refrigeration Cycle Controls**
REFRIGERATION PLANT OPERATOR (1st Class)
SYLLABUS

Topic 28 Compression Refrigeration System Pre-Startup Procedures
Topic 29 Compression Refrigeration System Operations
Topic 30 Absorption Refrigeration System Operation and Maintenance
Topic 31 Psychrometric Properties of Air
Topic 32 Application of the Psychrometric Chart
Topic 33 Fans for Air Distribution Systems
Topic 34 Ventilation and Air Filters
Topic 35 Air Conditioning Duct Systems
Topic 36 Humidification
Topic 37 Coil Types
Topic 38 Coil Operation
Topic 39 Air Conditioning Systems I
Topic 40 Air Conditioning Systems II
Topic 41 Air Conditioning Heat Recovery Systems
Topic 42 Air Conditioning System Controls
REFERENCE SYLLABUS

For

Refrigeration Plant Operator
(2nd Class)
Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator (2nd Class) Examination.

Recommended Study Program:
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Reference Syllabus for Refrigeration Plant Operator (2nd Class) Examination Candidates

Major Topic: Heating Systems and Human Comfort
Topic 1 Heat Gains and Losses
Topic 2 Steam Heating Equipment
Topic 3 Steam Heating Systems
Topic 4 Hot Water Heating Systems
Topic 5 Hot Water Heating System Equipment and Operation
Topic 6 Warm Air Heating System Equipment
Topic 7 Warm Air Furnace Components and Maintenance
Topic 8 Ventilation and Air Filters
Topic 9 Infrared and Electric Heating
Topic 10 Humidification
Topic 11 Electric Controls for Heating Systems

Major Topic: Refrigeration
Topic 12 Refrigeration Theory
Topic 13 Refrigerants
Topic 14 Compression Refrigeration Systems
Topic 15 Refrigeration Compressors
Topic 16 Heat Exchangers for Refrigeration Systems
Topic 17 Refrigeration Accessories
Topic 18 Cooling Towers
Topic 19 Air Conditioning Systems

Major Topic: Refrigeration and AC System Controls
Topic 20 Refrigeration Metering Devices and Capacity Controls
Topic 21 Refrigeration Cycle Controls
Topic 22 Compression Refrigeration System Pre-Startup Procedures
Topic 23 Compression Refrigeration System Operations
Topic 24 Air Compression
Topic 25 Introduction to Electricity
Major Topic: Introduction to Plant and Fire Safety

Topic 26 Introduction to Plant Safety
Topic 27 Plant Safety Programs
Topic 28 Handling of Dangerous Materials
Topic 29 Plant Fire Safety
Topic 30 Fire Extinguishing Methods and Equipment
REFERENCE SYLLABUS

For

Refrigeration Plant Operator Recreation
Introduction

This Syllabus is intended to assist candidates studying for the Refrigeration Plant Operator Recreation 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.
Reference Syllabus for Refrigeration Plant Operator Recreation Examination Candidates

**Major Topic: Acts, Regulations, and Codes**
- **Topic 1** Boiler and Pressure Vessels Act
- **Topic 2** Introduction to CSA and ASME Codes for Boilers
- **Topic 3** Introduction to Plant Safety
- **Topic 4** Refrigeration Plant Safety

**Major Topic: Basic Communication**
- **Topic 1** Technical Communications
- **Topic 2** Plant Communications

**Major Topic: Elementary Science**
- **Topic 1** SI Units
- **Topic 2** Basic Arithmetic Operations
- **Topic 3** Transposition
- **Topic 4** Areas and Volumes of Solids
- **Topic 5** Application of Basic Mechanics
- **Topic 6** Introduction to Thermodynamics
- **Topic 7** Introduction to Matter and Chemistry
- **Topic 8** Introduction to Electricity

**Major Topic: Safety**
- **Topic 1** Fire Safety and Site Hazards
- **Topic 2** Building Safety

**Major Topic: Environmental**
- **Topic 1** Gas Detection and Monitoring
- **Topic 2** Environmental Impact of Refrigerants
Major Topic: Principles of Refrigeration

Topic 1 Applied Thermodynamics
Topic 2 Refrigerants
Topic 3 Basic Refrigeration Cycles

Major Topic: Refrigeration Equipment and Components

Topic 1 Refrigeration Compressors
Topic 2 Oil Separators
Topic 3 Compressor Lubrication
Topic 4 Condensers
Topic 5 Cooling Towers
Topic 6 Evaporators
Topic 7 Metering Devices
Topic 8 Cooling Coils

Major Topic: Refrigeration Controls and Instrumentation

Topic 1 Fundamentals Measuring Devices
Topic 2 Basic Operational Controls
Topic 3 Basic Safety Controls

Major Topic: Refrigeration System Operation and Maintenance

Topic 1 Checks
Topic 2 Safety Devices and Functions
Topic 3 Troubleshooting
Topic 4 Procedures