PO Box 697
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GENERAL INFORMATION

Introduction:

This Syllabus is intended to assist candidates studying for the Second Class Refrigerator Plants (Standardized or Provincial) Certificate Examination.

Application to Undertake Examination:

A candidate must submit an application and the prescribed fee at least thirty (30) days before the date of examination as shown on the examination schedule.

Examination Instructions:

The examination consists of two papers, each of 3½ hours duration.

The candidate is allowed to bring the following items into the examination room:

1. A.S.M.E. Codes, except sections VI and VII.
2. The jurisdictional Act and the applicable Regulations.
3. Non-programmable calculator and drawing instruments.
4. C.S.A. B52.

NOTE: The items referenced above are the responsibility of the candidate and must be shown to the examiner for approval.

The examiner will bring a limited supply of:

1. A.S.M.E. Sect. 8
2. C.S.A. B52
3. One dictionary
4. Mathematical Tables and Pschrometric Chart

The candidate must show picture I.D. at the examination.

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REFERENCE SYLLABUS FOR REFRIGERATION PLANT OPERATOR - SECOND CLASS

STANDARDIZED OR PROVINCIAL

EXAMINATION CANDIDATES

Part "A"

3½ Hours
Multiple Choice
Examination

A. **Applied Mathematics**

Elementary algebra and trigonometry, equations involving areas and volumes, measuration

B. **Applied Mechanics**

Simple problems involving levers, rope and chain blocks, simple gearing, centrifugal force and gravity

C. **Standards and Codes**

D. **Thermodynamics**

(a) Heat and measurement of heat; temperature scales

(b) Specific heat, sensible heat, latent heat

(c) Expansion of solids and liquids; linear, surface and volumetric expansion; conduction convection and radiation

(d) Work and heat; mechanical equivalent of heat, laws of thermodynamics

(e) Expansion and compression of gases; thermal efficiency

(f) Pressure-Enthalpy diagrams

(g) Psychometric properties of air

(h) Co-efficient of performance

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E. **Welding**

F. **Pumps/Compressors**

G. **Piping and Valves**

H. **Lubrication**

I. **Basic Electricity**

J. **Fire Prevention and Plant Safety**

(a) Plant Safety

(1) Plant safety department; safety personnel

(2) Types of accidents; causes and prevention

(3) Harmful gases, treatment of personnel exposed to harmful gas; gas masks; compressed air or oxygen breathing apparatus

(4) General safety equipment; mechanical guards, protective clothing; safety harnesses, noise survey meters

(5) Lifting gear, cranes; ropes, chains, slings, hooks

(6) Artificial respiration; Holger-Nielson and Schafer methods, mouth to mouth resuscitation

(b) Fire Protection

(1) Classes of fires; selection of fire protective equipment

(2) Types of fire fighting equipment, operation and construction

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(3) Handling and storage of flammable materials

(4) Emergency drill; steps taken in the event of fire

Part "B"

3½ Hours
Multiple Choice
Examination

A. **Refrigeration and Air Conditioning**

(a) Refrigeration

(1) Principles and methods of refrigeration; compression systems

(2) Refrigerants; types of properties, classifications, uses

(3) Refrigerating plants; types, layouts, installation details

(4) Plant equipment; compressors, condensers, evaporators, liquid receivers, oil separators, absorbers, heat enchanters, driers, scale traps, piping and fittings, cold room construction

(5) Operation of refrigerating plants; starting up and shutting down, charging, hand and automatic purging, automatic expansion valves, compressor lubrications, brine solutions, leak testing, trouble shooting

(6) Safety and control; Code requirements, safety fittings, compressor and refrigerant system instrumentation and controls

(7) Computations of capacities and performance of refrigerating plants; heat pumps effect theoretical horsepower, pressure enthalpy charts

(b) Air Conditioning

(1) Fundamentals; terminologies and definitions in psychometrics; heat transfer, heat load, cooling load

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(2) Space heating and cooling systems and equipment; steam heating; hot water heating, high temperatures water heating; central and unit cooling systems; chilled water cooling; combined heating and cooling systems

(3) Humidity and temperature control instrumentation

B**. Psychometry**

C. **Air Distribution**