-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

Hanover House
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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **0064422** **-Session-1986-87**

-Superclass- **XH**

-Title- **PRINCIPLES OF REFRIGERATION (x $^{1}/_{2}$)**

-DESCRIPTION-

Type and Purpose

A specialist module ($^{1}/_{2}$) which enables the student to acquire a basic knowledge of the technology of refrigeration.

Preferred Entry Level

04004 Energy (1/2).

Learning Outcomes

The student should:

1. know the features of basic refrigeration systems;
2. know the function and construction of system elements;
3. be able to monitor, test and adjust refrigeration plant;
4. comply with regulations and procedures and use safe working practices specified for equipment and work areas.

Content/ Context

Corresponding to the Learning Outcomes:

1. the refrigeration process: principles of operation of vapour compression and vapour absorption cycles; comparison of these cycles. System diagram showing direction of refrigerant flow and heat transfer.
2. system elements: common refrigerants; electric motors; compressors; condensers; expansion valves; evaporators; thermostats and pressure controls; insulation.

3. plant operation: procedures for monitoring, testing and adjusting; typical faults and remedial action.

4. safety precautions applicable to tools, equipment and work areas.

Suggested Learning and Teaching Approaches

This module should be geared to the needs of a maintenance/service engineer whose main concern is with the operation, maintenance and repair of equipment rather than the application of thermodynamic principles.

Units and terminology should be presented in context throughout the module.

It may be possible to arrange assignments and investigations on manufacturers' or operators' premises.

A systems approach should be applied to the study of processes and equipment.

Students should be encouraged to discuss problems, exchange ideas, assist each other and make decisions.

Assessment Procedures

All learning outcomes must be validly assessed.

The student must be informed of the tasks which contribute to summative assessment. Any unsatisfactory aspects of performance should, if possible, be discussed with the student as and when they arise.

Acceptable performance in the module will be satisfactory achievement of the performance criteria specified for each learning outcome.

The following abbreviations are used below:

LO Learning Outcome
IA Instrument of Assessment
PC Performance Criteria

LO1

IA Written/graphics exercise.

PC The student draws a correct systems diagram for a common refrigeration process, indicating with appropriate terminology:

(a) the main components;

(b) the direction of flow of the refrigerant;

(c) the direction of the heat transfers.

LO2

IA Written/graphics exercise.

PC The student describes the function and construction of the main elements in a basic refrigeration system.

LO3

IA Assignment report.

PC For a test on refrigeration plant, the student compiles a report containing data and appropriate comments on the following:

(a) readings taken;

(b) adjustments.

LO4

IA Observation checklist (in which the following elements must be included).

PC The student consistently:

(a) wears all necessary clothing and equipment;

(b) behaves in a manner appropriate to the working environment;

(c) uses tools and equipment safely.