-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

Hanover House
24 Douglas Street
GLASGOW G2 7NG

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **0064257** **-Session-1986-87**

-Superclass- **XM**

-Title- **RADIO TELEX SYSTEMS (x 2)**

-DESCRIPTION-

Type and Purpose

A general module (2) which enables the student to acquire the knowledge and skills needed to understand and operate a telex system in the maritime environment.

Preferred Entry Level

04200 Basic Telecommunications
02102 Keyboarding

Learning Outcomes

The student should:

1. know the functioning principles of telex systems, for both National and Maritime;
2. know codes and line transmission systems and the limitations of telex transmission systems;
3. be able to apply the regulations and transmission procedures for radio based systems;
4. demonstrate the use of user controls on radio based systems;
5. demonstrate the ability to communicate over radio based telex systems.

Content/ Context

Telegraph Codes:

(a) 5 Unit Code (CCITT Alphabet No. 2);

(b) letter shift code - figure shift code;

(c) special facilities, eg. Answer Back, 'J' Bell, etc;

(d) 5 Unit code with Stop / Start bits.

Transmission Systems:

(a) single current transmissions;

(b) double current transmissions;

(c) simplex;

(d) two way Simplex Teleprinter Circuit (Half Duplex);

(e) two way Simplex with Local Record;

(f) duplex.

Telegraph Working Speeds:

(a) character elements;

(b) modulation rate - Bauds;

(c) relationship between Baud Rate and Time Intervals;

(d) character per second/character per minute and calculate rates.

Telegraph Signal Distortion:

(a) bias distortion;

(b) character distortion;

(c) restitution of modulation;

(d) telegraph distortion, expressed as a % of unit interval, examples and calculations.

Telegraph Relays:

(a) polarised relays;

(b) carpenter relays.

Frequency Shift Keying:

(a) speed in Bauds, and Bandwidth relationship;

(b) 170 Hz Shift Types;

(c) 85 Hz Shift Types (Off-Shore);

(d) block diagram of FSK Line Transmission;

(e) multi-channel frequency shift telegraphy;

(f) four channel Di-plex (or Double Frequency Shift).

Multiplexing:

(a) groups, Supergroups, and Hypergroups;

(b) frequency division multiplexing.

Further Codes:

(a) ASCII (American Standard Code for Information Interchange) code - (CCITT Alphabet No. 5);

(b) ARQ code (HF Radio Service NON MARINE) (CCITT Alphabet NO.3.).

Error Detecting:

(a) parity bits;

(b) odd or even parity.

Off-Shore ISB System:

(a) 10 bit code;

(b) Baud Speed 68.5;

(c) autospec;

(d) uppersideband - number of teleprinter circuits;

(e) lower sidebank - telephony;

(f) block diagram of Autospec;

(g) examples of correction;

(h) leased lines.

SITOR:

(a) marine sitor 7 bit code;

(b) parity 3/4;

(c) block transmissions;

(d) Baud Rate;

(e) use of control signals;

(f) transmission/pause ratio of ISS & IRS;

(g) transmission cycle;

(h) distance between stations. time/distance relationship;

(I) assigned carrier frequency (1.7kzHz).

Equipment Specifications.

Performance figures required by ET 4036, ET 4040 & ET & ET 4120, to ensure system compatability.

Telex Paper Tape:

(a) preparation;

(b) reading;

(c) correcting - as applicable to different machines, e.g. Types 444 & 2300/S & Transtel);

(d) preparation of paper tape, using header tapes;

(e) transferring and editing information from existing tape (Old Data) to new tape Up Date. Sitor Operation:

(a) back to back machines;

(b) back to back machines via error correcting device; (e.g. SPECTOR I AND SPECTOR II)

Sitor Live Operation:

machine to machine via spector & transmitter/receivers FEC, Sel FEC, & ARQ modes.

General Maintenance:

(a) paper, tape and ribbon replacement;

(b) test messages;

(c) loop tests, with SPECTORS.

Regulations and use of documents.

(a) ITU MANUAL, for use by the Maritime Mobile & Maritime Mobile Satellite Service, ISBN 92-61-00171-8;

(b) list of coast stations;

(c) list of ship stations;

(d) list of special service stations;

(e) notice to ship wireless stations.

Suggested Learning and Teaching Approaches

The relationship between Learning Outcomes 1-5 should be emphasised at all times. It should be stressed, that in practice, the Learning Outcomes will each form an integral part of the overall competence in relation to the use of radio telex systems.

Relating to the Learning Outcomes:

1-3 a didatic approach with short lectures, discussions and demonstrations.

4&5 a radio telex system with error correcting systems is essential for this part of the module. Practical exercises could be devised to achieve all the objectives in these two Learning Outcomes. The regulations and procedures discussed in Learning Outcome 3 could be operated in these Learning Outcomes. Students should operate in pairs alternating between sending and receiving data.

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 be discussed with the student as and when they arise.

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

The following abbreviations are used below:

LO Learning Outcome IA Instrument of Assessment
PC Performance Criteria

LO1 IA Written short answer test.

PC The student:

(a) correctly produces annotated diagrams indicating the constituent parts of both:

(I) a National system;

(ii) a Maritime system;

(b) correctly describes the function and operation of each unit of the system.

LO2 IA Written short answer test.

PC The student correctly:

(a) describes the codes listed, and the transmission systems available.

(b) details correctly the limitations of the systems listed in the content.

LO3 IA Practical exercises.

PC Given sample data, the student correctly formats the data according to the accepted procedures.

LO4 IA Observation checklist based on practical exercises.

PC The student correctly demonstrates the use of user controls on radio based systems.

LO5 IA Observation checklist based on practical exercises.

PC The students work in pairs as receiver/transmitter and correctly exchange given data using simulated radio based telex systems.