

**-SQA-SCOTTISH QUALIFICATIONS AUTHORITY**

**Hanover House  
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**NATIONAL CERTIFICATE MODULE DESCRIPTOR**

**-Module Number- 0064333 -Session-1986-87**

**-Superclass- XL**

**-Title- AUDIO AND RADIO CIRCUITS**

**-DESCRIPTION-**

Type and Purpose A specialist module which introduces the student to circuit diagram interpretations for audio and radio systems. It is suitable for students who are, or wish to be, involved in servicing radio and audio equipment.

Preferred Entry Level 04202 Introduction to Radio and Audio Systems

Learning Outcomes The student should:

1. identify from circuit diagrams, and explain the function of, the main stages of the listed systems;
2. know the controls and carry out the appropriate adjustments for the listed systems;
3. identify simple faults which can cause partial or complete failure of the listed systems;
4. know the basic principles of stereophonic sound and the systems related to stereophonic sound reproduction.

Content/ Context Corresponding to the Learning Outcomes:

- 1(a) radio tuners: circuits of am and fm radio tuners to include: rf amplifiers, mixer stages, oscillator stages, if amplifiers, demodulators, A.G.C. and A.F.C., signal feedpaths;
- (b) AF power amplifiers: circuits to include: pre-amplifiers; driver stages, output stages, protection stages;

- (c) audio tape recorders: circuits to include: input stages, record/playback amplifiers, output stages, bias oscillator stages.

The function of each listed stage in terms of signal level, frequency and bandwidth.

2. each variable major manual and preset control function to be identified and its setting for correct operation.
3. fault diagnosis:
  - (a) by practical measurement;
  - (b) from given circuit information.
4. methods of creating and reproducing stereophonic information, via disc, tape and radio broadcasts, basic block diagrams.

#### Suggested Learning and Teaching Approaches

Circuit diagrams or extracts of current equipment manuals should be used.

While equipment using integrated circuits should receive greater emphasis, discrete component circuits should not be completely ignored.

Learning Outcomes 2 and 3 should be taught in a workshop environment.

In Learning Outcome 4, the basic principles of the techniques used to create and reproduce two channel sound should only be explained. This should be taught as an introduction to stereophonic sound systems and the depth of treatment should be to block diagram level.

#### 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 short answer test based on circuit diagrams.

PC The student:

- (a) correctly identifies given stages from a selection of circuit diagrams of:
  - (i) a.m./f.m. tuners;
  - (ii) a.f. power amplifiers;
  - (iii) audio tape recorders.
- (b) satisfactorily explains the functioning principles of the given stages.

LO2 IA Observation checklist based on practical exercises.

PC The student demonstrates the correct set up procedures using the variable controls.

LO3 IA Written exercise.

PC The student clearly and accurately explains the effects of given fault conditions when:

- (a) failure of a stage has occurred;
- (b) failure of a component within a stage has occurred.

LO4 IA(1) Short written and graphical tests.

PC The student describes stereo systems and draws block diagrams encompassing:

- (i) sound principles;
- (ii) encoding systems;
- (iii) reproduction systems.

IA(2) Written short answer test.

PC The student:

- (a) correctly explains the basic principles of reproducing stereophonic sound;
- (b) supports his/her explanation by simple block diagrams of relevant systems.