Radio Amateurs’ Examination

For Examinations in 1969

76 Portland Place, London, W.1
The Advisory Committee of the
City and Guilds of London Institute

55. RADIO AMATEURS’ EXAMINATION

List of Members, March 1968

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55. Radio Amateurs' Examination

The Postmaster-General requires that every applicant for an Amateur (Sound) Licence or an Amateur (Television) Licence must have passed the Radio Amateurs' Examination as evidence of his possessing the requisite theoretical technical knowledge. Every applicant for an Amateur (Sound) Licence must also have passed the Post Office Morse Test within one year of applying for the licence.

The Radio Amateurs' Examination is held twice a year, normally in May and December, and is a Pass examination, consisting of a single question paper of three hours' duration. Each paper is divided into two parts. Part I contains only two questions, each of them compulsory. These questions are drawn from items 1 and 2 of the syllabus. Part II consists of eight questions, drawn from the remaining items of the syllabus, of which six only should be attempted. Candidates are expected to achieve a Pass in each of the Parts separately; failure in either Part entails failure in the examination as a whole. Each candidate will receive a record of performance giving the class of result (Pass or Fail) in the examination as a whole and an indication of performance (Pass or Fail) in the separate parts of the examination.

The examination is open to all candidates, whether they have attended a course of tuition or not, and a certificate will be awarded to successful candidates.

Where courses are provided, it is recommended that theoretical lectures should be accompanied, wherever possible, by simple practical demonstrations and students should be encouraged to regard practical work as an integral part of their training. Unauthorized radiation must, of course, be avoided.

No Full Technological Certificate is awarded to this subject.

SYLLABUS:

PART I

1. Licensing Conditions

Conditions (terms, provisions and limitations) laid down by H.M. Postmaster-General in the Amateur (Sound) Licence A, including the Notes appended, covering the purpose for which the transmitters may be used; types of signals permissible; types of emission; power, frequency control and measurements; avoidance of interference to other stations, particularly in bands shared with other services; qualifications of operators; log-keeping and use of call signs.
2. **Transmitter Interference**


**PART II**

3. **Elementary Electricity and Magnetism**

Elementary theory of electricity; conductors and insulators; units; Ohm’s Law; resistors in series and parallel. Power. Permanent magnets and electro-magnets and their use in radio work. Primary cells. Self and mutual inductance; types of inductors used in receiving and transmitting circuits. Capacitance; construction of various types of capacitors and their arrangement in series or parallel.

4. **Elementary Alternating Current Theory**

Alternating currents and voltages. Alternating current theory incorporating circuits with inductance, capacitance and resistance. Impedance, resonance, coupled circuits, acceptor and rejector circuits. The transformer.

5. **Thermionic Valves and Semiconductors**


6. **Radio Receivers**


7. **Low Power Transmitters**

Oscillator circuits; use of quartz crystals to control oscillators; frequency multipliers, power amplifiers. Methods of keying transmitters. Methods of modulation and types of emission in current use.
8. Propagation

Nature and propagation of radio waves. Ionospheric and tropospheric conditions and their effect on propagation. Relationship between wavelength, frequency and velocity of propagation.

9. Aerials

Common types of receiving and transmitting aerials. Transmission lines. Directional systems. Aerial couplings to lines and transmitters. Matching.

10. Measurements

Measurement of frequency. Operation of simple frequency meters, including crystal-controlled types. Use of verniers and other interpolation methods. Artificial aerials and their use for lining-up transmitters. Measurement of the power input to the final stage(s) of a transmitter. Measurement of current and voltage at audio and radio frequencies. Use of cathode-ray oscilloscope for the examination and measurement of waveform.

Textbooks


Radio Society of Great Britain publications (R.S.G.B.):

“A Guide to Amateur Radio”

“The Morse Code for Radio Amateurs”

“The Radio Amateurs Examination Manual”

“The Amateur Radio Handbook”

“Foundations of Wireless”. M. G. Scroggie. (Iliffe.)

“Basic Electricity”. R.A.F. A.P.3372. (H.M.S.O.)

“Basic Electronics”, Parts 1-6. (Technical Press Ltd.)

“Radio and Line Transmission”, Parts I and II. Danielson and Walker. (Iliffe.)


“Radio Servicing”. L. Butterworth. (English Universities Press.)

Philip’s Paperbacks (Iliffe):

“Direct Current”

“Alternating Current”

“Radio Valves”

“Measuring Instruments”