

## Report on multiple-choice Question Paper

Paper: **7650-010 Radio Amateurs' Examination**

Examination date: **19 May 2003**

Syllabus Topic or Objective	Number of items	Comments on performance of candidates
1 Licensing conditions	18	The questions on the Licence were very well done by most of the candidates. One quarter of the candidates incorrectly thought that it was unnecessary to include the transmitter power in the Station Log.
2 Operating procedures and practices	7	Only one question was not well answered. It asked on which of four bands s.s.b. should not be used. Many candidates chose the 50.00 to 52.00 MHz band, whereas the correct answer was 10.100 to 10.150 MHz. As the 10.1 MHz band is only 50 kHz wide, the h.f. band plan recommends that it is used only for c.w. and narrow bandwidth data modes.
3 Electronic principles and practice	6	Most questions were well answered. A question on a resonant circuit caused some difficulty in that only one third of the candidates knew that to halve the resonant frequency, the LC product must be quadrupled.
4 Receivers, transmitters and transceivers	8	<p>Four of the questions in this section caused difficulty with some candidates. Over half of the candidates did not know that the R.I.T. control on a transceiver is used to tune the receiver independent of the transmitter frequency.</p> <p>30% of candidates thought that frequency chirp on a c.w. signal was caused by short rise and fall times rather than by poor voltage regulation of the power supply. They evidently confused key clicks with chirp.</p> <p>In a question on the most practical method of keying a Morse transmitter, many candidates chose to place the key in the base of the oscillator stage instead of in the emitter of the driver transistor.</p> <p>In a block diagram of a simple transmitter and receiver installation, 39% of the candidates did not recognise one of the components to be a changeover relay.</p>
5 Transmitter interference	14	<p>36% of candidates did not know that a two-tone test was a method of checking the operation of an s.s.b. transmitter.</p> <p>A question on the purpose of a buffer stage following an oscillator was surprisingly badly answered by some candidates, 31% of them thinking that it was to prevent spurious oscillations rather than to provide isolation of the oscillator.</p> <p>Candidates generally did not know the measures used to prevent parasitic oscillations. A low value carbon resistor with a few turns of wire wrapped round it was not recognised as being a device to prevent parasitic oscillations in an amplifier. Similarly, a 22Ω resistor connected directly in the collector of a low power common emitter amplifier was not understood to be a parasitic 'stopper' resistor.</p>

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6 Electromagnetic compatibility	14	<p>33% of candidates did not understand that a computer can cause interference over a wide frequency spectrum.</p> <p>There was some difficulty in recognising the shape of a response curve of a 50 Hz mains filter, many candidates confusing the graphs of low pass and high pass filters.</p> <p>The other questions on e.m.c. were very well answered.</p>
7 Propagation and antennas	7	All the questions on propagation and antennas were well answered by most of the candidates.
8 Measurements	6	The only question causing difficulty was one that required the calculation of the voltage across one of two equal resistors, connected in series across a 10V supply. 37% of the candidates did not take into account the internal resistance of the analogue voltmeter in their calculation.
General comments on the paper		<p>There were 381 candidates for the May RAE of whom 92 were overseas, in Hong Kong, Malta and Trinidad and Tobago. Thirteen UK candidates were absent and did not attempt the examination.</p> <p>The paper was moderated from a detailed analysis of the performance of 332 candidates whose results were available at the time of this report. Of the 332 candidates, 248 (74.7%) of them were successful.</p> <p>City and Guilds will continue to offer the Radio Amateurs' Examination for the remainder of 2003. The next examination will be held on Monday, 1 December 2003. This will be the final examination that may be used as a qualification for direct entry to a full Amateur Radio Licence.</p> <p>Accreditation for the City and Guilds scheme has been conferred by the Qualifications and Curriculum Authority (QCA) on to the National Qualifications Framework (NQF) until December 2003. Colleges should note the reference N1004326 when applying for assisted funding per student place.</p> <p>The report for the December Radio Amateurs' Examination (7650) is expected to be available on the Internet about three weeks after the date of examination at</p> <p style="text-align: center;"><a href="http://www.g4dmp.co.uk">http://www.g4dmp.co.uk</a></p>