

## Report on multiple-choice Question Paper

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

Examination date: **2 December 2002**

Syllabus Topic or Objective	Number of items	Comments on performance of candidates
1 Licensing conditions	17	<p>Questions on the licensing conditions were very well answered by most of the candidates. The only question that many candidates found difficult was about the Licence requirements for non-interference. 43% of the candidates thought that their licence required them not to cause interference to any electronic apparatus. While in practice this would be desirable for good neighbour relations, the Licence only requires the Licensee not to cause undue interference to any wireless telegraphy.</p> <p>Due to an administrative error, the incorrect Licence Schedule was attached to the examination question paper. In view of this, one of the questions was excluded from the scoring of the paper.</p>
2 Operating procedures and practices	7	<p>All the questions on station operating were well answered, most of the candidates attaining good scores in this section of the syllabus.</p>
3 Electronic principles and practice	6	<p>Some of the candidates found difficulty with two of the questions that required calculations.</p> <p>Firstly, candidates were asked for the frequency tuning range of a 125<math>\mu</math>H inductor connected in parallel with a 80–320pF variable capacitor. Calculating the frequency using one of the capacitance figures would have provided the correct answer from the choices available, while the second capacitance would have confirmed the chosen answer was correct.</p> <p>The other question required the candidate to understand that the voltage across a zener diode in a circuit would be constant with a varying supply voltage.</p>
4 Receivers, transmitters and transceivers	8	<p>Nearly all of the questions in this section were very well answered, but 48% of the candidates incorrectly thought that an increase of capacitance in a tuned circuit would cause the frequency to rise.</p>
5 Transmitter interference	14	<p>31% of candidates thought that the reason for limiting the audio bandwidth of a transmitter was to prevent over modulation, rather than to help prevent the wasteful use of the r.f. spectrum.</p> <p>The other questions on transmitter interference were well answered.</p>
6 Electromagnetic compatibility	14	<p>Many candidates did not appreciate that the most likely point of entry of a 7MHz interfering signal to a television receiver would be the braid of the coaxial aerial feeder.</p> <p>The main purpose of a ferrite ring on the power lead to a transmitter was understood by many candidates to prevent interference to the receiver, rather than to prevent transmitter r.f. from entering the public mains supply.</p>

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7 Propagation and antennas	7	<p>There were two questions in this section that caused difficulty.</p> <p>57% of candidates did not know that the speed of radio waves depends on the medium through which they are travelling.</p> <p>In a question about the impedance at the centre of an 80m dipole antenna, 71% of candidates did not realise that the impedance would be reduced if the height of the antenna was lowered to a height of 7m.</p>
8 Measurements	6	<p>Candidates answered well two questions on the calculation of d.c. input power and r.f. output power of a transmitter. But a question on the position of a voltmeter in a circuit to measure the d.c. input was not well answered, 71% of the candidates connecting the meter at the r.f. end of the r.f. choke.</p>
General comments on the paper		<p>The December 2002 Radio Amateurs' Examination was a difficult paper and was moderated accordingly, the pass mark adjusted having regard to the performance in each of the questions in the past. Most candidates were very well prepared for the examination and answered correctly several of the topics that have previously caused difficulty.</p> <p>There was a total of 246 UK candidates who took the examination, plus a further 33 from overseas. Of the 246 candidates whose results were available at the time of this report, 188 (76.4%) of them were successful. City and Guilds will continue to offer the Radio Amateurs' Examination during 2003. The next examination will be held on Monday, 19 May 2003 for which the City and Guilds fee will be £29.50.</p> <p>Accreditation for the scheme has now been conferred by the Qualifications and Curriculum Authority (QCA) on to the National Qualifications Framework (NQF) covering the period from December 2001 to December 2003. Colleges should note the reference N1004326 when applying for assisted funding per student place.</p> <p>Reports for the Radio Amateurs' Examination (7650) are normally available on the Internet about three weeks after the date of each examination at</p> <p style="text-align: center;"><a href="http://www.g4dmp.co.uk/">http://www.g4dmp.co.uk/</a></p>