Report on RCF Examinations in 2012

Number of Candidates and Examinations

The table shows candidate and examination numbers since 2006. The number of Advanced exams assumes each centre is a separate exam to maintain comparability with Foundation and intermediate which were available at short notice. Advanced exams were held at 6 set times per year until 2012 when it was increased to seven giving an exam on every day of the week

		Foundation	Intermediate	Advanced
Number of Examination sessions	2012	**606**	**261**	**199**
	2011	581	235	152
	2010	605	239	121
	2009	643	260	155
	2008	614	265	169
	2007	616	206	95
	2006	640	230	154
Number of Candidates	2012	**1874**	**756**	**497**
	2011	1837	694	408
	2010	1896	652	321
	2009	2021	704	426
	2008	2003	733	397
	2007	1965	646	289
	2006	2034	625	446
Number of Passes	2012	**1599**	**702**	**350**
	2011	1570	632	279
	2010	1605	596	222
	2009	1704	662	289
	2008	1678	677	263
	2007	1605	603	161
	2006	1719	604	326
Pass rate	2012	**85·3%**	**92·8%**	**70·4%**
	2011	85·5%	91·1%	68·6%
	2010	84·7%	91·4%	69·2%
	2009	84·3%	94·0%	67·8%
	2008	83·8%	92·4%	66·2%
	2007	87·4%	93·4%	64·1%
	2006	84·5%	96·6%	73%

Results for 2012

Results for Foundation and Intermediate were not collected in 2011 and only for the latter half of 2012.

Foundation

Percentage of questions answered correctly by topic.

	2012	2010
Licensing Conditions	81·8	85·3
Technical Basics	82·4	82·6
Transmitters & Receivers	80·0	76·5
Antennas & Feeder	84·1	83·4
Propagation	80·3	83·6
EMC	83·8	83·3
Operating practice	86·7	86·7
Safety	89·3	91·6
Overall	83·0	83·8

Wrong answers were fairly randomly spread amongst the various sections.

In Licensing Conditions, questions about Regional Secondary Locators when moving around the countries of the UK caused difficulties as did the suffixes to use when operating away from the Main Station Address. Some knew the letter to use but not where to put them in the callsign.

Many candidates were unaware that Foundation licensees may supervise amateurs with higher qualifications. Surprisingly many did not correctly answer questions on the need to identify at 15 minute intervals.

The functions of the various blocks of a receiver were not well answered and it seems as if the concept of a receiver as a system is not understood. The detector was frequently identified as the stage which first detects the RF signal.

The concept of gain in a directional antenna caused difficulty, particularly the point that the antenna does not ‘amplify’ as such but redistributes or focuses the same total power.

Other sections showed no clear patterns.

Intermediate

	2012	2010
Licensing Conditions	88	85
Technical Basics	78	76
Transmitters & Receivers	78	73
Antennas & Feeder	80	80

Propagation	84	80
EMC	76	79
Operating practice	84	83
Safety	93	91
Construction & Measurements	82	81
Overall	82	81

There are no significant patterns to report and candidates seem generally well prepared.

Failure to correctly look up items in the schedule is of modest concern. Although most candidates pass by a sufficient margin that such an error does not affect their result, that is not always the case and some candidates have needlessly failed.

Advanced

	2012	**2011**
Licensing Conditions	85	83
Technical Basics	67	64
Transmitters & Receivers	64	62
Antennas & Feeder	64	65
Propagation	70	71
EMC	70	70
Operating practice	76	78
Safety	87	80
Measurements	69	63
Overall	71	70

In Licensing Conditions many candidates did not know who to contact when joining a group or net.

The fact that crystals have two resonant frequencies was not well known.

In Transmitters the function of the transistor in a VFO was not well understood. The operation of the frequency multiplier caused difficulties to some. Questions on the result of over-modulation and the purpose of filtering out higher audio frequencies in the microphone amplifier were not well answered. The generation of FM and the modulated bandwidth is causing difficulty to some candidates as is chirp and the spectra of data transmissions. Whilst emission codes are not longer part of the licence conditions their use, particularly F2B and J2B, is a useful and unambiguous method of specifying emission types and are specifically mentioned in the syllabus. It appears few candidates appreciate that.

Difficulties in the Receivers section include the definitions of selectivity and signal to noise ratio and questions on second channel interference were not well answered.

Candidates continue to overlook the effect of velocity factor in feeders and end-correction in calculating the length of dipole antennas. Many did not know the impedance of a folded dipole or the

dimensions of a quad antenna. A question about a dual band dipole with a broken trap caused difficulty to many. Questions on SWR and Return loss were not well answered.

In the propagation section there was the usual confusion over whether it is the Field Strength or Power Flux Density that follows the inverse square law. Some did not know the height of the E-layer or the time of day for the highest MUF.

In EMC questions based on second channel interference were not well answered and velocity factor was again forgotten in calculating the length of a quarter-wave stub. Questions on this specifically mention 'solid polythene' and candidates are expected to know that has a 2/3 velocity factor. Some did not know which harmonic of 2m transmissions would be in the TV broadcast band. Passive Intermodulation products again caused difficulty this year.

The Operating practices, safety and measurement sections showed no particular pattern of errors.

The number of Advanced examination sessions and the number of candidates has increased substantially this year. Clubs and exam centres are warmly congratulated for that. The Examination Committee appreciates the considerable effort required to run courses and examinations, particularly at Advanced level and that is very much appreciated.

Examination Committee March 2013