Assessment Services
1 Giltspur Street London EC1A 9DD
Telephone 0171 294 2468 *Facsimile* 0171 294 2400

City & Guilds

OTS 99

Report on multiple-choice Question Paper

Paper: 7730-001 Novice Radio Amateurs Examination Examination date: 7 June 1999

Syllabus Topic or Objective	Number of items	Comments on performance of candidates
1 Receivers and receiving techniques	5	There were two questions in this section that some candidates found difficult. In a question on the effect of trying to receive a c.w. Morse signal without the b.f.o. being switched on, many candidates did not realise that the background noise would go up and down in sympathy with the Morse code. The block diagram of a simple superhet receiver caused much difficulty with 37% of the candidates confusing the local oscillator stage with the beat frequency oscillator. The other three questions in this section were well answered.
2 Components, applications and units	3	Fewer than half the candidates understood that a transformer is used to change an a.c. voltage. 34% of the candidates thought that it would convert a.c. into d.c., evidently confusing a transformer with a rectifier.
3 Measurements	4	This section was badly answered by many candidates. One question showed a diagram with two 10Ω resistors connected in series across a 12V battery. Fewer than half the candidates realised that the voltage across one resistor would be 6V. 39% thought that it would have the full 12V across it. A question requiring a simple application of Ohm's Law also caused difficulty. A diagram showed two 5kΩ resistors in series with a multimeter and connected to a 10V supply. 34% of the candidates thought that the 0–2A range would be suitable, instead of 0–2mA. They did not understand that 5kΩ=5000Ω. 49% of candidates thought that an advantage of an absorption wavemeter was that it had good sensitivity, rather than the fact that it did not require a power supply.
4 Propagation and antennas	5	Over one-third of the candidates chose 50MHz, instead of 3.5MHz, as being the best band for communication throughout the UK during daylight. A question on the polarisation of a dipole antenna mounted between two vertical masts caused confusion among 27% of the candidates who thought that the antenna would be vertically polarised. Two-thirds of the candidates answered this question correctly. When asked on which band a half wave dipole antenna 15 metres long would be used, 44% of candidates answered 20MHz instead of 10MHz, not realising the significance of it being called a *half wave* dipole.

continued overleaf

Syllabus Topic or Objective	Number of items	Comments on performance of candidates
continued		
5 Transmitters and transmitting techniques	10	Most questions in this section were well answered, just four requiring comment. Despite a copy of the Schedule being attached to the question paper, only 45% of the candidates said they would set their mode switch to c.w. for operation on the 28.060 to 28.190MHz band. 29% of candidates would set it to upper sideband s.s.b. for which they would not be licensed. Only 29% of candidates knew how to measure the d.c. power input of a transmitter; 41% of them would merely measure the power supply voltage. 48% of candidates did not understand that modulating an a.m. carrier with an audio frequency would produce upper and lower sidebands. In an example of interference to a neighbour's TV receiver, only a third of candidates recognised the symptoms as being due to poor design of the TV set.
6 Operating techniques	6	All questions on operating techniques were well answered by most candidates.
7 Station layout	1	Well answered. Candidates knew where to connect their Morse key.
8 Construction	1	The question on how to recognise a good soldered joint was well answered.
9 Safety	2	Well answered, but some candidates were still unable to work out what size of fuse they require in a 13A mains plug.
10 Licensing conditions	8	Candidates had a good understanding of the licensing conditions.

General comments on the paper	Overall, candidates performed well in the examination and the percentage of successful candidates is slightly higher than average. However, there were many candidates who were weak on the technical sections and relied on obtaining good marks on the last half of the paper. For example, there seemed to be a lot of misunderstanding on the use of meters for measurements in simple d.c. circuits and in the practical use of a half wave dipole. The total entry for the examination was 186. This report is based on a detailed analysis of the results of 170 candidates of whom 142 (83.5%) were successful. The next examination in this subject will be on Monday, 13 September 1999.