

You will be pleased to find that you are almost at the end of this RAE course. I hope that you have found it interesting and useful. The main aim is, of course, to help you towards a pass in the RAE. However I am sure this will not be the end of the learning road. It is often said that more is learnt *after* the taking the driving test... I think this is also true with the RAE.

Do something practical!

A great deal may be learned by 'hands on' experience. In this course we have been dealing with resistors, capacitors and coils but many students have never picked up a soldering iron and actually made anything. Ideally, this course would have included some 'construction' but this is not easy when time is short. However; when you have taken the exam there will be a "hole" to be filled while you await your result.

I suggest that you try a little bit of home construction.

What to make....?

The answer to this question rather depends on you what you already own. For example, for those of you not having a short-wave Amateur Bands receiver then the solution is easy - a Direct Conversion Receiver. These receivers are simple to construct but are adequate for reception of both CW and SSB transmissions.

If you have a receiver then why not make an *aerial tuning unit* or an *audio filter* or a *noise bridge*.

Don't run before you can walk !

I think that it is best to start with a simple construction project. It is much better to make a 80 Metre direct conversion receiver that works than a multiband superhet that never gets finished !!.

Even if you have a good stock of components, I recommend that you start with a kit. In this way you can be sure that you are using the correct components for the job and the project is more likely to work!!!

Back to the present.

The job in hand at the moment is the RAE. I enclose some questions. These will act as a bit of quick revision I can then send you some more questions. The more experience you have with “multiple answer questions” the better.

In the RAE it is not uncommon for more than one answer to be correct. Therefore great care is necessary to ensure that the most suitable answer is chosen.

**These questions are not “in proportion” to the content of the syllabus.** However I have prepared a Mock Exam and its questions ARE in proportion...just half the number.

14.1 When a current in a coil changes at a rate of *1 ampere per second* and induces an *EMF of 1 volt in a second coil* there is said to be:

- a) a self inductance of one Henry
- b) a mutual inductance of one Henry
- c) an inductance of one Henry
- c) a mutual conductance between the two coils

14.2 A transmission line showing “resistance only” at its terminals would:

- a) be mismatched
- b) be perfectly matched
- c) have a high SWR
- d) be a resonant line

14.3 An advantage of “FM” over “AM” is that :

- a) demodulation is easier
- b) much less power is required a given quality of transmission
- c) tuning is easier
- d) the radio frequency peak power output is very much greater

14.4 A radio wave that is propagated with its magnetic field parallel to the earths surface is said to be:

- a) vertically polarized
- b) horizontally polarized
- c) circularly polarized
- d) angularly polarized

14.5 The function of a balanced modulator is to:

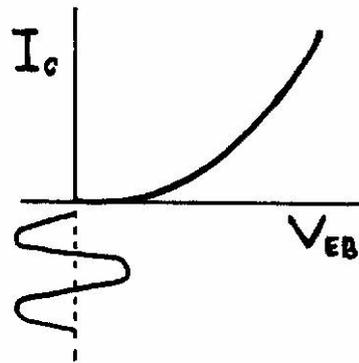
- a) frequency modulate a carrier                      b) re-insert the carrier  
c) produce a sideband with no carrier                d) eliminate one of the sidebands

14.6 At 200 KHz an inductor has a reactance of  $40\Omega$  and has a resistance of  $30\Omega$ . What is the impedance of the inductor at this frequency? :

- a)  $10\Omega$                       b)  $700\Omega$                       c)  $70\Omega$                       d) 50

14.7 In a series circuit containing both resistance and capacitance, what formula should be used to calculate the impedance?;

- a)  $R + X_c$                       b)  $R \times X_c$                       c)  $\sqrt{R^2 \times X_c^2}$                       d)  $\sqrt{R^2 + X_c^2}$



14.8 Is this transistor operating in Class

- a) A  
b) AB  
c) B  
d) C

14.9 Assume that your call sign is G8XYZ. Which of the following would you use if you had set up an Amateur Radio Station on a hill top in the Isle of Man?

- a) GM8XYZ/P                      b) GD8XYZ/P                      c) GM8XYZ/A                      d) GD8XYZ

14.10 What is the second harmonic of a transmitter operating on a frequency that has a wavelength of 100 Metres?:

- a) 333kHz                      b) 666kHz                      c) 3000kHz                      d) 6000kHz

14.11 The maximum frequency that is reflected that is reflected by the ionosphere, when the signal transmitted vertically, is known as

- a) the maximum usable frequency                      b) the critical frequency  
c) the skip frequency                      d) the tropospheric frequency

14.12

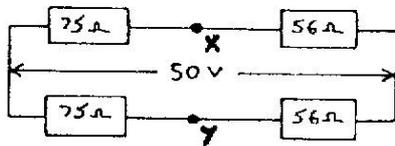
Which wave shape is most likely to have the *minimum* harmonic content?

- a) a triangular wave    b) sinusoidal wave    c) square wave    d) low frequency pulse

14.13      The sunspot cycle is usually about:

- a) 5 years    b) 11 years                      c) 22 years                      d) 33 years

14.14      In the circuit below, what is the voltage that would be measured across "X" and "Y".  
Don't do lots of calculations, just look and use logic/common sense.



14.15      The speed of radio waves is :

- a)  $150 \times 10^6$       b)  $150 \times 10^8$       c)  $300 \times 10^6$       d)  $300 \times 10^8$                       Metres per second

Don't do these questions under "exam conditions". Use course notes, books etc.

I can send you a mock exam when you are ready.