Level 2 Technology and Electronic Components (7267-422)

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e-Quals
Assignment guide for Candidates
Assignment A

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Level 2 Technology and Electronic Components (7267-422) Assignment A

Introduction – Information for Candidates

About this document

This assignment comprises all of the assessment for Level 2 Technology and Electronic Components (7267-422).

Health and safety

You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance

The recommended time allowance for this assignment is **three and a half hours**.

Level 2 Technology and Electronic Components (7267-422)

Candidate instructions

Time allowance: 3 hours 30 minutes

Assignment set up:

This assignment is made up of **four** tasks

- Task A – Oscilloscope and multimeter operation for a.c. measurements
- Task B – CR circuit measurements
- Task C – Health and Safety
- Task D – Multiple-choice questions

Task A – Oscilloscope and multimeter operation for a.c. measurements

Equipment provided:

- an oscilloscope
- a multimeter
- a low-frequency signal generator
- connecting leads.

1 Set the frequency of the signal generator output to 100Hz and the waveshape to sinewave. Set the amplitude of the signal generator output to 2V rms, using the multimeter. Ask your assessor to check your equipment setup. Calculate each of the following and record your answer.

- Peak value.
- Peak-to-peak value.

2 Disconnect the multimeter and connect the signal generator output to the oscilloscope with the controls set to give a display of two cycles. Sketch the observed waveform on the oscilloscope. Use graph paper or other suitable media and scale the axes.

3 For the observed waveform, determine each of the following.

- Peak-to-peak voltage.
- Periodic time.
- Frequency.

4 Set the frequency of the signal generator output to 50kHz and the waveshape to sinewave. Set the amplitude of the signal generator output to give 2V peak-to-peak on the oscilloscope with the controls set to give a display of two cycles. Sketch two cycles of the observed waveform. Use graph paper or other suitable media and scale the axes.

5 For the observed waveform, calculate the rms voltage.

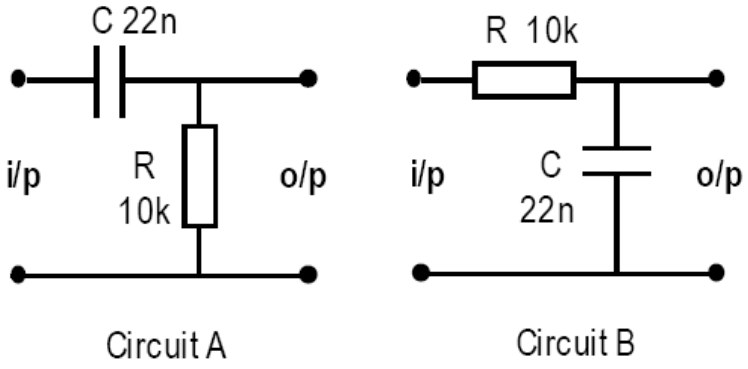
6 Measure and record the output voltage of the signal generator on the multimeter. State why this value is different to that calculated in Task A5.

Task B – CR circuit measurements

Equipment provided:

- a dual-trace oscilloscope
- a low-frequency signal generator
- two CR circuits labelled A and B
- the necessary connecting leads.

1 Apply a sinewave of 500Hz, 2V peak-to-peak to the input of circuit A.



2 Monitor the input and output waveforms of circuit A. Sketch **two** cycles of the observed waveforms. Use graph paper or other suitable media with a common timescale and scale the axes.

3 State whether the output waveform is leading or lagging the input waveform.

4 Repeat steps B1 to B3 for Circuit B.

Task C – Health and Safety

1 With reference to an electrical or electronic workshop/laboratory, draw a plan of the electrical power distribution showing what forms of protection are included (fuses, circuit breakers etc) and stating their ratings. Use the correct circuit symbols. These symbols must be listed and their meaning given.

2 List **four** specific precautions that may be taken with portable electrical hand-tools to reduce the chance of electric shock.

3 State **two** specific functions of a residual current device (RCD).

Task D – Multiple-choice questions

1 Your assessor will now give you a multiple-choice answer sheet containing **six** multiple-choice questions. Answer **all** of the questions and hand your answer sheet back to your assessor.

When you have finished working:

- Sign each document above your name and label all removable storage media with your name.
- Hand all paperwork and removable storage media to your assessor.

If the assignment is taken over more than one period, all paperwork and removable media must be returned to the test supervisor at the end of each sitting.

End of assignment

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