

Diploma in Consumer Affairs and Trading Standards

LEGAL METROLOGY TECHNOLOGY

NOVEMBER 2017

Candidates answering the questions from the Scottish or Welsh law viewpoint: Please ensure you write “Scottish” or “Welsh” on the front of your examination booklet.

The examiners may expect candidates to show knowledge of legislation which is in place but not in force (i.e. has been enacted) and regulations which have been made but are not yet in force, if they are directly relevant to the subject-matter of the examination.

There are three sections to the examination paper:

<i>Section A</i>	Consists of five questions. Candidates should attempt to answer all questions. Total allocation of marks is 25 marks. Suggested time allocation is 45 minutes.
<i>Section B</i>	Consists of two questions. Candidates should attempt to answer one question. Total allocation of marks is 25 marks. Suggested time allocation is 45 minutes.
<i>Section C</i>	Consists of three questions. Candidates should attempt to answer two questions. Total allocation of marks is 50 marks. Suggested time allocation is 90 minutes.

Total time allowed – three hours (plus ten minutes reading time).

The Legal Metrology Technology paper is a closed book; no materials are permitted to be taken into the examination room.

*The examination paper has **six** pages, including this front sheet.*

Section A

Candidates should attempt to answer **all** questions -
total of 25 marks.

1. For the purposes of Directive 2014/31, what is a Declaration of Conformity and what should it contain?
(5 marks)

2. Answer **both** parts
 - (a) What is the significance of the Directive 2014/30 on the harmonisation of the laws of Member States in relation to electromagnetic compatibility of weighing and measuring equipment, and what documentation should a manufacturer supply with regard to this?
(2 marks)
 - (b) What effect could a potential failure to comply with these requirements have with regard to a non-automatic weighing instrument?
(3 marks)(total 5 marks)

3. Briefly explain the difference between an analogue load cell and a digital load cell.
(5 marks)

4. Answer **both** parts
 - (a) What is WELMEC?
(2 marks)
 - (b) What is the significance of a WELMEC guide?
(3 marks)(total 5 marks)

5. What is the purpose of an air-separator on a liquid fuel-measuring instrument and how does it work?
(5 marks)

Section A total of 25 marks.

End of Section A.

Section B

Candidates should attempt to answer **one from two** questions - total of 25 marks.

6. Answer **all** parts
- (a) Discuss what the marking requirements are for non-automatic weighing instruments under The Non-Automatic Weighing Instruments Regulations 2016 (SI/1152). (6 marks)
 - (b) Contrast these with the previous requirements under The Non-Automatic Weighing Instruments Regulations 2000 (SI/3236) and consider the implications of these changes. (9 marks)
 - (c) List briefly the tests that you would carry out on a weighbridge, for the purposes of showing compliance with EN45501 (2015) as a module F notified body. (10 marks)
- (total 25 marks)

7. Discuss the different legislative frameworks, testing requirements and markings that would apply to a water meter for domestic premises, which was first used for trade in the UK in 2001, and bore the inspector's stamp, and one that was first placed on the market in 2017.
- Outline the differences if the water meter was used for trade in retail premises?
- (25 marks)

Section B total of 25 marks.

End of Section B.

Section C

Candidates should attempt to answer **two from three** questions - total of 50 marks.

8. Answer **all** parts

A local weights and measures authority, which also acts as a module F conformity assessment body, employs you. You have been asked by a local authority in another part of the country to carry out an initial conformity assessment on a self-service 'bag drop' kiosk point of sale system at an airport.

The instrument is composed of a weighing module, which is a 30kg x5g non-automatic weighing instrument and has a type approval certificate. The weighing module already bears conformity assessment marks that show it meets the requirements of the previous Non-Automatic Weighing Instrument Regulations (SI 3236).

The indicator of the weighing module is not visible to the person using the self-service 'bag-drop'. The instrument has a non-automatic zero-setting device, which is not available to the user of the instrument and can only be operated by the baggage handling company.

The weighing module is connected to the newly installed POS system, which has its own test certificate and has a weight indicator, mounted externally on the side of the kiosk. It is this weight indication which is used by the consumer.

- (a) Explain why you are authorised to undertake an initial conformity assessment in another part of the country. (5 marks)
- (b) Would you be able to undertake the same procedure if the instrument was being subject to re-verification after repair? (5 marks)
- (c) What documentation would you expect to see before you undertook any metrological tests and who would you expect to provide the documentation? (3 marks)
- (d) What metrological tests would you carry out if you decide to undertake a conformity assessment process? (10 marks)
- (e) If the instrument meets the requirements of The Non-automatic Weighing Instruments Regulations 2016 (SI/1152), what conformity assessment markings would you apply and what documentation would you complete? (2 marks)
- (total 25 marks)

Section C is continued over the page.

9. Answer **all** parts

You have a large plant bakers in your authority and they would like to invest in the business, which includes automating the weight checking process by using an automatic check-weighing instrument. They bake loaves at 400g for a small loaf and 800g for a large loaf. The loaves are baked in a range of shapes, including French sticks.

After some initial trials, it becomes apparent that the French sticks will not pass over the weigh-head because of their length. The bakers decided that the automatic process can be halted and the French sticks weighed manually on the weigh-plate.

- (a) What legal requirements would be applicable to the check-weighing instrument?
(5 marks)
 - (b) What checks would you carry out to enable legal compliance to be demonstrated?
(10 marks)
 - (c) What are the implications of weighing the French sticks manually?
(5 marks)
 - (d) What information should be in any records kept by the bakers contain?
(5 marks)
- (total 25 marks)

Section C is continued over the page.

10. Answer **all** parts

You have a large petrol site, in your authority, which is being developed with new liquid fuel measuring instruments; they are fitted with Standard Temperature Accounting (STA) modules and are replacing existing dispensers that have been in place since 2002.

It is the intention of the petrol site owner to use the existing Electronic Point of Sale (EPOS) system. You have been asked to undertake an initial conformity assessment of the entire petrol site.

- (a) What Directives would you expect to see on the Declaration of Conformity and who should provide this Declaration? (3 marks)
- (b) What metrological tests would you undertake on the liquid fuel-measuring instrument? (9 marks)
- (c) How would you test the STA module of the liquid fuel-measuring instrument? (9 marks)
- (d) What action would you take in respect of the use of the existing EPOS system? (4 marks)
- (total 25 marks)

Section C total of 50 marks.

END OF EXAMINATION PAPER.