

CTSI Professional Competency Framework (CPCF) written examination

Unit 4: Weights and Measures

May 2022

Guidance for this examination

Please ensure that you indicate, clearly at the top of the answer booklet, the law viewpoint from which you will be answering: English, Scottish or Welsh.

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.

Examination structure

There are two sections to the examination paper:

Section A Consists of six questions.
Candidates should attempt to answer three questions.
Total allocation of marks is 30 marks.
Suggested time allocation is 30 minutes.

Section B Consists of four questions.
Candidates should attempt to answer two questions.
Total allocation of marks is 70 marks.
Suggested time allocation is 90 minutes.

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

Note:

The Weights and Measures paper is a **closed book**; no materials are permitted to be taken into the examination room.

The examination paper has (6) pages, including this front sheet.

Section A

Candidates should attempt to answer three questions.

Each question carries ten marks.

Total: 30 marks.

1. **Answer both parts:**

(a) What is the OIML?

(5 marks)

(b) Giving an example, explain the significance of a normative document.

(5 marks)

(total: 10 marks)

2. Distinguish between an automatic catch-weigher and an automatic checkweigher.

(10 marks)

3. What is a local standard?

Explain your answer with reference to the Weights and Measures Act 1985.

(10 marks)

4. **Answer both parts:**

(a) Using a practical example of a liquid fuel instrument manufacturer, briefly explain the requirements with which a manufacturer must comply, and the procedure that must be followed, to become an approved verifier under Section 11A of the Weights and Measures Act 1985.

(5 marks)

(b) Contrast the responsibilities of a manufacturer, installer, repairer and adjuster under these requirements.

(5 marks)

(total: 10 marks)

5. The Government has recently announced its intention to allow the crown mark on capacity serving measures used for intoxicating liquor. With reference to Weights and Measures Legislation, explain whether this would be possible today.

(10 marks)

Section A continues over the page.

6. **Answer both parts:**

(a) What is a defective package and what are the acceptance and rejection criteria for the purposes of The Packaged Goods Regulations 2006.

(5marks)

(b) What actions can you take if a batch of packages has a greater number of defective packages than is allowed?

(5marks)

(total:10 marks)

Section A total of 30 marks.

End of Section A.

Section B
Candidates should attempt to answer two questions.
Each question carries 35 marks.
Total: 70 marks.

7. **Answer all parts:**

You are planning to undertake a market surveillance and inspection project at a local hospital in GB and plan to check the compliance of some patient weighing instruments. The instruments are 150kg x 1Kg and there are a number of them being used. They bear a CE mark, an M mark and the identification number of a notified body. They are powered by mains electricity.

(a) What other relevant Directives would you expect to see listed on the Declaration of Conformity?
(4 marks)

(b) What other markings would you expect to see on the data plate of the instrument?

Give six examples.

(6 marks)

(c) What are the requirements regarding software identification and how would you check this?

(4 marks)

You decide to check the accuracy of the instrument.

(d) Outline, in detail, the metrological tests that you would carry out and what errors you would apply. The instrument does not have an extended displaying device.
(15 marks)

You discover that the indicator of the patient weigher can be unplugged from the base and plugged into a similar weighing instrument, and the 'new' instrument will continue to work. The hospital has been swapping the bases and the indicators for many months, to ensure that it can maintain enough instruments when a base or indicator fails.

(e) What advice would you give the hospital about this practice?

(6 marks)

(total: 35 marks)

8. A local business wishes to sell tinned tuna in oil in 10kg e-marked packages and has suppliers in the Republic of Ireland.

Explain to the business all the requirements that they must meet if they wish to use this supplier.

(35 marks)

Section B continues over the page.

9. **Answer all parts:**

You are employed by a local weights and measures authority that also acts as a module F conformity assessment body. You have been asked by a local authority in another part of the country to initially conformity assess a self-service 'bag drop' kiosk point of sale system at an airport. The manufacturer intends to submit an instrument which is composed of a weighing module purchased by them previously. This is a non-automatic weighing instrument, which has an EU27 type-examination certificate issued by the NMI (the Dutch Notified Body). It bears conformity assessment marks that show that it meets the requirements of The Non-automatic Weighing Instrument Regulations (SI 2016-1152) (as amended), and bears a CE mark and a notified body number used by the manufacturer.

The weighing module will be connected to the newly installed POS system at the airport, which has its own parts certificate issued by an EU27 notified body.

- (a) Explain why you are authorised to undertake an initial conformity assessment in another part of the country. Would you be able to undertake the same procedure if the instrument was being subject to re-verification after repair?
(6 marks)

- (b) Do you need to visit the airport to carry out the conformity assessment?

Explain your answer.

(6 marks)

- (c) Briefly explain why the Declaration of Conformity for the weighing platform supplied by the manufacturer would refer to The Electromagnetic Compatibility Regulations 2016.

What are the procedural requirements that a manufacturer would need to follow to demonstrate compliance with these regulations?

(6 marks)

- (d) Can you accept the weighing module that has an EU27 type-examination certificate and bears a CE mark?

Explain your answer.

(3 marks)

- (e) The parts certificate makes a reference to type U software.

Explain what this means.

(7 marks)

- (f) After you have completed the initial conformity assessment, what markings would you expect to see on the instrument and what documentation would you issue?

Explain your answer.

(7 marks)

(total: 35 marks)

Section B continues over the page.

10. **Answer all parts:**

You are out doing inspections at a local scrapyards. You notice a liquid fuel measuring instrument on the site and a customer is filling a jerry can, which is then paid for.

The dispenser is not networked to any other devices. It dispenses diesel and unleaded fuel. The instrument has a data plate which bears a CE and an M with the suffix 16. It is marked with a type-examination number issued by an EU27 notified body.

It does not bear the identification number of a notified body.

The local weights and measures authority for which you work is also an approved body for module F.

- (a) Draw a block diagram of the major parts of the liquid fuel dispenser and indicate the direction of flow of the fuel.

(14 marks)

- (b) What advice would you give the owner of the liquid fuel measuring instrument regarding the absence of the notified body number?

(6 marks)

- (c) Assuming the owner of the liquid fuel measuring instrument takes your advice, what physical tests would you undertake, and what errors would you apply, when you are undertaking an initial conformity assessment? What conformity assessment marks would you apply?

(10 marks)

- (d) The owner of a liquid fuel measuring instrument would like to connect it to his new computer system and print invoices for any fuel sold. Would this be possible? Explain your answer.

(5 marks)

(total: 35 marks)

Section B total of 70 marks.

END OF EXAMINATION PAPER.