

# **Mastership in Chemical Analysis**

**Part B Examination**

**Paper 2**

**Burlington House**

**29 October 2008**

**1000 – 1300**

## Instructions

Answer **one** question from section 1 and **two** questions from each of sections 2 and 3.

The answers to each section must be returned in the examination script booklets provided. All examination scripts must be handed in at the end of the examination.

The marks allocated to each section are given.

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### Section 1: Food Law and Policy (answer one question from this section)

- 1 Article 4 of Regulation (EC) No 882/2004 of the European Parliament and of the Council on official control performed to ensure the verification of compliance with feed and food law, animal health and animal welfare requires competent authorities to ensure:

“that staff carrying out official controls have, or have access to, an adequate laboratory capacity for testing and a sufficient number of suitably qualified and experienced staff so that official controls and control duties can be carried out efficiently and effectively;

that they have appropriate and properly maintained facilities and equipment to ensure that staff can perform official controls efficiently and effectively”.

The competent authority in the UK is the Food Standards Agency. “Official Control” is defined as “any form of control that the competent authority or the community performs for the verification of compliance with feed and food law, animal health and animal welfare rules”.

In the context of feed and food law in the UK discuss the strengths and weaknesses of the current provision of official control in its widest context and suggest, if you think it is appropriate, how the mechanisms of provision could be improved.

**(20 marks)**

- 2 Outline the main provisions of the Nutrition and Health Claims (England, Wales or Scotland) Regulations 2007. Include in your answer examples of how these Regulations impact on stakeholders and the transition provisions for implementation.

**(20 marks)**

**Section 2: Agriculture** (answer two questions from this section)

3 Prescribed limits for Undesirable Substances are given in the Feeding Stuffs Regulations 2000.

- (a) For **four** different undesirable substances for which prescribed limits are given, explain their origin in feed and the way in which they are deleterious. [**Note:** no more than one example per group of substances (for example, metals) should be given]

**(2 marks each, total 8 marks)**

- (b) For each substance listed in (a), briefly outline a method to determine its presence.

**(3 marks each, total 12 marks)**

4 (a) Regulatory methods have been said to be 20 years behind modern analytical practice. Discuss the implications of this in a Certificate of Analysis for feeding stuffs.

**(14 marks)**

- (b) Outline the underlying principle of the Kjeldahl method for protein determination.

**(6 marks)**

5 Within the context of the Agriculture Act 1970 and Regulations made under it, explain what is meant by **ten** of the following:

- (a) Secondary nutrient
- (b) Pesticide
- (c) Feeding Stuff
- (d) Premixture
- (e) Unwholesome
- (f) Trace element
- (g) Reduced sample
- (h) Point 4 compliant laboratory
- (i) Chelating agent
- (j) Agricultural Analyst
- (k) Triple superphosphate
- (l) Biuret value

**(2 marks each, total 20 marks)**

**Section 3: Water** (answer two questions from this section)

6 (a) In the context of the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations 2007, explain what is meant by the following:

- (i) natural mineral water
- (ii) spring water
- (iii) bottled drinking water

**(8 marks)**

(b) What treatment(s) may be applied to natural mineral waters and under what circumstances?

**(8 marks)**

(c) For **four** of the following, what are the criteria for use of the indications:

- (i) Rich in mineral salts
- (ii) Suitable for a low sodium diet
- (iii) Acidic
- (iv) Contains iron
- (v) Contains calcium

**(4 marks)**

7 The Drinking Water Regulations 2007 prescribe maximum and minimum concentrations of anions and cations that may be present in potable water.

Discuss the techniques that may be applied to remove excess ions and to restore any subsequent deficiency in a water. Include in your answer a discussion of methods for the major anions and cations.

**(20 marks)**

- 8 (a) Discuss methods other than chlorination for the sterilisation of a small water supply. Include the advantages and disadvantages of different techniques.

**(6 marks)**

- (b) What are the microbiological hazards associated with small private water supplies taken from a variety of sources?

**(8 marks)**

- (c) Explain parameters and sample frequencies and limits for a small, non-food private supply.

**(6 marks)**