

Mastership in Chemical Analysis

Part C Examination

University of Reading

2 September 2008

Section 1: Communication in the form of formal certificates

Prepare appropriate official certificates for the following samples:

- 1 Breakfast cereal bar with dyed cranberries described as “blueberry breakfast bar”

The label information and artwork is provided together with nutritional analysis.

(10 marks)

- 2 Raw chicken purchased from a butcher’s shop:

Aerobic colony count	1.2×10^8 cfu/g
Enterobacteriaceae	4.6×10^4 cfu/g
E. coli	6.3×10^2 cfu/g
Salmonella spp	Not detected in 25g
Listeria monocytogenes	Not detected in 25 g
Total volatile nitrogen	28 mg N/100g

(10 marks)

- 3 Report on the following label for a complete feeding stuff for poultry which was accompanied by the following Statutory Declaration:

Protein	16.51%
Oil	3.06%
Fibre	3.55%
Ash	13.09%
Methionine	0.35%
Vitamin A	8000iu/kg
Vitamin D3	3000iu/kg
Vitamin E	10mg/kg
Copper	15mg/kg

Statutory analysis of the feed gave the following results:
(the results are the average of duplicates which agreed to within 10%)

Protein	14.97%
Oil	2.88%
Fibre	3.87%
Ash	9.71%
Methionine	0.60%
Vitamin A	6900iu/kg
Vitamin D3	3200iu/kg
Vitamin E	13mg/kg
Copper	12mg/kg

The oil was analysed within the prescribed time limit and the vitamins within the date of guarantee.

(10 marks)

Section 2: Microscopy and identification

Carry out an examination including microscopy on each of the three specimens provided and report your findings:

4 A material found in an unlabelled container from an ethnic food store

(7 marks)

5 A material found in an unlabelled container from a health food shop

(7 marks)

6 A substance obtained from a butcher

(16 marks)

Section 3: Problem Solving

Investigate as required and report as appropriate:

- 7 A sampling officer has submitted a formal sample. Report as appropriate.

(20 marks)

- 8 The remains of a box of langoustine has been submitted as a result of a complaint that they were green and “tasted awful”. Report your findings on a Food Act Certificate.

(20 marks)

Question 1 - Label Information and Artwork

Blueberry Burst Bars



Product description

Oat cereal bars with dried blueberry flavoured cranberries, raisins, blueberries.

Ingredients

Oat Flakes (33%), Fruit (24%) (Blueberry Infused Dried Diced Cranberries (Cranberries, Sugar, Blueberry Juice, Blueberry Extract, Sunflower Oil), Raisins, Dried Blueberries (1%) (Blueberries, Sugar, Sunflower Oil)), Glucose Syrup, Oat Flour, Vegetable Oil (Rapeseed Oil, Palm Oil), Raw Cane Sugar, Honey, Rice Flour, Barley Malt Syrup, Nibbed Almonds, Natural Flavouring.

Allergen information

Contains: Oats, Barley.

May contain: Wheat, Rye, Other Nuts, Sesame Seeds.

Other information

- Lactose free
- No artificial flavourings, colourings or preservatives
- Suitable for vegetarians

Nutritional information

Typical values	per 100 g	per 30g bar	Guideline Daily Amounts (Adults)	% GDA per bar
Energy	1653kJ	496kJ		
	392kcal	118kcal	2000kcal	5.8%
Protein	5.8g	1.7g	45g	3.8%
Carbohydrate	70.1g	21.0g	230g	9.1%
of which sugars	30.5g	9.2g	90g	10.2%
Fat	9.8g	2.9g	70g	4.1%
of which: saturates	2.0g	0.6g	20g	3.0%
mono-unsaturates	4.8g	1.4g		
polyunsaturates	2.6g	0.8g		
Fibre	5.1g	1.5g	24g	6.3%
Sodium	Trace	Trace	2.4g	
equivalent as Salt	Trace	Trace	6.0g	

Name and Address

Manufactured by:
Vaccinium Limited
Myrtle Avenue
North Bilberryshire
NA2 CO3

Date of Minimum Durability

Best Before End 28th February 2009

Analytical Data

Typical values	per 100 g
Protein	4.7g
Moisture	0.3g
Sucrose	0.1g
Glucose	20.3g
Fructose	20.8g
Lactose	0.0g
Fat	9.6g
of which: saturates	2.0g
mono-unsaturates	4.8g
polyunsaturates	2.4g
Fibre	5.0g
Sodium	0.01

MChemA Part C 2008: Examiners Notes

The following information for examiners was not available to candidates during the examination:

Q1 There is a heavy emphasis on blueberry in the artwork, a high analytical value for the sugar and almond has gone missing from the allergens list.

Q2

Q3

Q4 Israeli Cous Cous

Q5 Spirulina purchased unlabelled from a health food shop

Q6 Unlabelled container with marinade mix, 4 components – water soluble colour, salt, 2 spices

Q7 A sample of “home made” Pickled Walnuts from a market, formal sample, cloudy and green liquor, no specific instructions.

Has low acidity, highish salt, sugar, claims presence of methyl paraben, but actually has propyl paraben (non-permitted), non-pathogenic Clostridium, yeast, high in copper (made in a copper pan).

Q8 Complainant did not read instructions and assumed cooked. TVN borderline but OK and when cooked as directed the green colour disappeared.