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Mastership in Chemical Analysis

Part C Examination

Glasgow Scientific Services

Wednesday 7th September 2022

09:00 to 17:00

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Section 1: Communication in the form of formal certificates

Prepare appropriate official certificates for the following samples:

1. A sample of vacuum-packed Honey Roast Smoked Salmon (with a shelf-life of 21 days) gave the following results of analysis and microbiological examination:

Moisture	57.86	g/100g
Water Activity	0.99	
pH	6.2	
Chloride	0.4	g/100g
Salt in Aqueous Phase	1.1	%
Colony Count	3.8 x 10 ⁵	cfu per g
<i>Enterobacteriaceae</i>	<100	cfu per g
<i>Escherichia coli</i>	<10	cfu per g
Coagulase Positive <i>Staphylococci</i>	<10	cfu per g
<i>Clostridium perfringens</i>	<10	cfu per g
<i>Listeria species</i>	<10	cfu per g
<i>Listeria monocytogenes</i>	detected in 25g	
<i>Listeria monocytogenes</i>	200	cfu per g

(10 marks)

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2. Milk chocolate, with declarations:
cocoa solids 20% minimum; milk solids 20% minimum, contains vegetable fats in addition to cocoa butter.

Results of analysis

Fat	30	g/100g
Protein	7.3	g/100g
Sugars	56	g/100g
Lactose	8.8	g/100g
Butyric acid	0.76	g/100g fat
Theobromine	614	mg/kg

(10 marks)

3. Prepare an Agriculture Act Certificate on the form provided for the reporting of a sample of 'Complete Pet Food for Adult Dogs' which on analysis gave the following results:

Oil	7.5	%
Protein	5.5	%
Fibre	0.1	%
Ash	2.7	%
Moisture	79.1	%
Copper	5.1	mg/kg
Lead	1.6	mg/kg
Cadmium	0.1	mg/kg
Arsenic	< 0.1	mg/kg
Mercury	< 0.05	mg/kg

The statutory statement accompanying the sample included the declarations:

Oil	6.8	%
Protein	8.0	%
Fibre	0.8	%
Ash	2.5	%
Moisture	80	%
Copper	5	mg/kg

(10 marks)

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Section 2: Microscopy and identification

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

You do not need to produce formal certificates for this section.

Please identify the following:

4. A specimen labelled as “Ground Fennel” has been submitted by a complainant who claims it does not have the usual taste and odour. She uses this product regularly in a recipe for Italian Sausages.

The complainant indicated that she purchased this product from a retailer who takes it from a bulk supply.

(10 marks)

5. Sub-sample of a jar being sold as “Spice” from a health food shop, recently under new ownership

(10 marks)

6. Product labelled as “Oregano” from a delicatessen

(10 marks)

Section 3: Problem solving

Please investigate the following:

7. A number of residents in a care home have taken ill after a birthday lunch.

The menu consisted of the following:

Cheese and onion sandwiches

Tuna and mayonnaise sandwiches

Smoked Salmon and Cream Cheese sandwiches

Sausage Rolls

Chocolate Cake

Victoria Sponge cake

Orange & Apple Juice

Tea, Coffee

(20 marks)

8. Consumer complaint that bacon is of poor quality, please investigate.

(20 marks)

END OF PAPER