



FACULTY OF SCIENCE

DEPARTMENT OF FOOD TECHNOLOGY BACCALAUREUS TECHNOLOGIAE: FOOD TECHNOLOGY

MODULE FTN1BM4
CAMPUS FOOD MICROBIAL ASSURANCE 4
 DFC

NOVEMBER EXAMINATION

DATE 21/11/2016

SESSION: 08:30 – 11:30

ASSESSOR(S)

MS D METCALFE

INTERNAL MODERATOR

DR B DLAMINI

EXTERNAL MODERATOR

PROF EM BUYS

DURATION

3 HOURS

MARKS

**155
100% 150**

NUMBER OF PAGES:

3 PAGES

INSTRUCTIONS:

HAND IN EXAMINATION PAPER AND ANSWER BOOK TOGETHER

REQUIREMENTS:

1 EXAMINATION ANSWER BOOK PER STUDENT

INSTRUCTIONS TO CANDIDATES:

1. Answer all the questions in the examination book provided.
 2. Number your answers clearly and correctly.
 3. Questions may be answered in any order, but subsections of questions must be answered together.
 4. Marks will be deducted for untidy and illegible handwriting.
 5. Good luck!
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You are responsible for the food safety management systems (FSMS) within your company which supplies unprocessed fresh eggs as well as processed egg products. There is an outbreak of salmonellosis affecting a large number people (>100) and the epidemiological investigation indicates artisanal ice-cream which is manufactured by one your customers as the source. Further investigation identifies the pasteurised whole eggs supplied by your company and used in the preparation of the ice cream as the source of the outbreak suggesting that contamination of eggs with *Salmonella enterica* serotype Enteritidis (*S. Enteritidis*) is the cause. Your organization is in a crisis situation and you need to take immediate action to prevent further outbreaks of egg-borne salmonellosis from products supplied by your company.

ANSWER THE FOLLOWING QUESTIONS.

QUESTION 1

- 1.1 At a national level, the **risk analysis** approach has been adopted and a **microbial risk assessment (MRA)** of *S. Enteritidis* in egg products has been conducted. Summarise and provide general considerations of **risk analysis** and demonstrate how the process of risk analysis can be applied to food safety decision-making. (8)
 - 1.2 Name and describe the four components and list the principles for conducting a **microbial risk assessment (MRA)** as contained in CAC/GL 30-1999: Principles and Guidelines for the Conduct of Microbial Risk Assessment. (15)
 - 1.3 Discuss the need and feasibility of **MRA** as a component of risk analysis including:
 - 1.3.1 The stakeholders who would ideally have been involved in the MRA. (3)
 - 1.3.2 Resources or inputs required to conduct a MRA. (4)
 - 1.3.3 The type and sources of technical and scientific data that would have been collected in order to conduct the MRA. (5)
 - 1.4 Based on the outcomes of the MRA conducted at national level, create an action plan for improving the **microbial risk management (MRM)** within the food safety system of the company based on the Codex risk management framework and principles. (10)
- [45]**
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QUESTION 2 OVER THE PAGE

QUESTION 2

The company has accreditation against ISO 22000:2005. Answer the following in regard to this FSMS.

- 2.1 **Management responsibility** (section 5, clauses 5.1 to 5.8) must be demonstrated in order to meet the requirements of ISO 22000:2005. Describe what is required from management using practical examples to demonstrate your understanding of management responsibility. (20)
- 2.2 **Verification** of the PRP(s) and the implemented FSMS is a requirement of ISO 22000:2005 (clause 7.2.3 and 8.4) and records of verifications and modifications made must be kept. Clarify the term verification and explain how you would go about verifying the PRP(s) and the FSMS in order to meet the requirements of the standard. (10)
- [30]**
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QUESTION 3

The Prerequisite Programmes (PRP) developed and implemented within the company were based on the guidelines contained in Codex Alimentarius document CAC/RCP 1-1969: *Recommended International Code of Practice: General Principles of Food Hygiene*.

- 3.1 Explain to your management team about the Codex Alimentarius Commission and what its purpose and objectives are. (5)
- 3.2 Outline the requirements of CAC/RCP 1-1969 with regard to personnel hygiene facilities and toilets. (5)
- 3.3 The implemented HACCP plans were developed using the guidelines contained in CAC/RCP 1-1969 annexure 1 and were revisited in order to comply with the requirements of ISO 22000:2005. Identify and describe the major differences you encountered between CAC/RCP 1-1969 and ISO 22000:2005 (clauses 5.5 and 7.3 – 7.8) in this regard. (15)
- 3.4 Formulate the hazard descriptions below correctly.
- 3.4.1 Salmonella in pasteurised liquid whole egg (2)
- 3.4.2 Egg shells in egg albumen powder (2)
- 3.4.3 Staphylococcus toxin in powdered egg yolk (2)
- 3.4.4 Chicken feathers in packed boxes of fresh eggs (2)
- 3.4.5 Inadequate pasteurisation (2)
- [35]**
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QUESTION 4 OVER THE PAGE

QUESTION 4

CAC/GL 60-2006: *Principles for traceability / product tracing as a tool within food inspection and certification systems* was used when developing the product traceability system required by ISO 22000:2005 (clause 7.9) implemented at the company.

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|-----|---|-------------|
| 4.1 | Explain traceability and motivate why it is an essential component of a FSMS. | (15) |
| 4.2 | Illustrate with practical examples how you can meet the product traceability requirements of ISO 22000:2005 (clause 7.9). | (10) |
| | | [25] |
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QUESTION 5

As a result of the crisis, the company has decided to work towards gaining Food Safety System Certification 22000 (FSSC 22000) within two years. Answer the following questions in regard to this decision.

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| 5.1 | The FSSC 22000 standard is recognised by the Global Food Safety Initiative (GFSI). Describe the GFSI and motivate why recognition of the standard by this organisation is noteworthy and how it would benefit the company. | (10) |
| 5.2 | Provide an overview of the scope and content of the FSSC 22000. | (10) |
| | | [20] |
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TOTAL: 155
100 %: 150