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UNIVERSITI SAINS MALAYSIA

Second Semester Examination  
2010/2011 Academic Session

April/May 2011

**IMK 407 – FOOD SAFETY**  
**[KESELAMATAN MAKANAN]**

Duration: 3 hours  
[Masa: 3 jam]

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Please check that this examination paper consists of FIVE pages of printed material before you begin the examination.

*[Sila pastikan bahawa kertas peperiksaan ini mengandungi LIMA muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]*

**Instructions:** Answer FIVE questions from Section A and Section B. You may answer the questions either in Bahasa Malaysia or in English. Answer Section A and Section B in separate answer books.

**Arahan:** Jawab LIMA soalan dalam Bahagian A dan Bahagian B. Anda dibenarkan menjawab soalan sama ada dalam Bahasa Malaysia atau Bahasa Inggeris. Jawab soalan Bahagian A dan Bahagian B dalam buku jawapan yang berasingan.]

In the event of any discrepancies, the English version shall be used.

*[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah diguna pakai.]*

**SECTION A**

**Answer at least THREE questions from this section in a separate answer book.**

1. List the various pre-requisite programs and discuss their importance in the development of a HACCP Plan.  
(20 marks)
2. Discuss the statement “detergent is not a single chemical but a mixture of chemicals”.  
(20 marks)
3. Choose a product of your choice and develop a HACCP plan for the manufacture of this product.  
(20 marks)
4. Answer all parts of this question
  - (a) Discuss the factors you will consider in selecting sanitizers.  
(10 marks)
  - (b) Explain why chlorine dioxide is a better sanitizer than chlorine-based sanitizers.  
(10 marks)
5. Answer all parts of this question  
Explain the following terms:
  - (a) Break-point chlorination
  - (b) Bacteriostat and bacteriocidal
  - (c) Chelating and sequestering agents
  - (d) In-plant chlorination
  - (e) Clean
  - (f) Disinfection
  - (g) Hygiene
  - (h) Deflocculation
  - (i) CIP
  - (j) COP

(Each two marks)

**SECTION B: Answer at least ONE question from this section in a separate answer book.**

6. Describe the various components of Risk Assessment. In your opinion, is Risk Assessment necessary? Explain. (20 marks)
7. Answer both parts of this question
- (a) Briefly describe the importance of *Fusarial* mycotoxins in food commodities and their health implications in human (10 marks)
- (b) With suitable examples, discuss briefly food allergens and their effects on human health (10 marks)

**BAHAGIAN A**

**Jawab sekurang-kurangnya TIGA soalan daripada Bahagian A dalam buku jawapan berasingan.**

1. *Senaraikan pelbagai program pre-requisite dan bincangkan kepentingannya semasa membangun pelan HACCP*

*(20 markah)*

2. *Bincangkan kenyataan ini “Detergen bukan terdiri daripada satu bahan kimia tetapi campuran pelbagai bahan kimia”*

*(20 markah)*

3. *Pilih satu produk dan bangukan Pelan HACCP untuk pembuatan produk ini.*

*(20 markah)*

4. *Jawab semua bahagian*

(a) *Bincangkan faktor faktor yang anda akan pertimbangkan semasa memilih bahan sanitasi*

*(10 markah)*

(b) *Jelaskan kenapa “chlorine dioxide” adalah bahan sanitasi yang lebih baik daripada bahan sanitasi berasaskan klorin.*

*(10 markah)*

5. *Jawab semua bahagian*

*Terangkan terma berikut:*

(a) *Break-point chlorination*

(b) *Bacteriostat and bacteriocidal*

(c) *Chelating and sequestering agents*

(d) *In-plant chlorination*

(e) *Clean*

(f) *Disinfection*

(g) *Hygiene*

(h) *Deflocculation*

(i) *CIP*

(j) *COP*

*(Setiap terma 2 markah)*

**BAHAGIAN B**

**Jawab sekurang kurang SATU soalan dalam buku jawapan berasingan**

6. *Huraikan pelbagai komponen Penilaian Risiko. Pada pendapat anda, adakah Penilaian Risiko perlu dilakukan? Jelaskan.*  
(20 markah)
7. *Jawab kedua-dua bahagian soalan ini:*
- (a) *Jelaskan secara ringkas, kepentingan mikotoksin Fusarial dalam komoditi makanan dan implikasi kesihatan terhadap manusia*  
(10 markah)
- (b) *Dengan memberi contoh-contoh yang sesuai, bincangkan secara ringkas alergen makanan dan kesannya terhadap kesihatan manusia*  
(10 markah)