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UNIVERSITI SAINS MALAYSIA

Second Semester Examination  
Academic Session 2009/2010

April/May 2010

**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 any **FIVE (5)** out of seven questions. You may answer the question either in Bahasa Malaysia or in English.

**Arahan:** *Jawab mana-mana **LIMA (5)** daripada tujuh soalan. Anda dibenarkan menjawab soalan sama ada [untuk KBI] dalam Bahasa Malaysia atau Bahasa Inggeris.]*

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].*

1. Answer all parts of this question.
  - (a) Describe the HACCP's approach towards ensuring food safety. (5 marks)
  - (b) Explain with the aid of examples, Critical Control Point and Critical Limits in a HACCP plan. (10 marks)
  - (c) How would you implement monitoring procedures and corrective actions. (5 marks)
  
2. Answer all parts of this question.
  - (a) Explain the classification of detergents. (5 marks)
  - (b) List the desired properties of detergents. (10 marks)
  - (c) List the different groups of surfactants and their role in detergents. (5 marks)
  
3. Answer all parts of this question.
  - (a) Discuss the various points you will take into consideration from a sanitation point of view when designing a food plant. (10 marks)
  - (b) List the various **DOs** and **Don'ts** concerning waste disposal. (10 marks)

4. Answer all parts of this question.
- (a) Discuss the factors you will consider in selecting sanitizers. (10 marks)
  - (b) Describe the limitations of chlorine-based sanitizers. (5 marks)
  - (c) Explain the mechanism how chlorine-based sanitizers inactivate microorganisms. (5 marks)
5. Describe the various components of Risk Assessment. In your opinion is Risk Assessment necessary, explain. (20 marks)
6. Briefly discuss the significance of aflatoxins, patulin and ochratoxin. (20 marks)
7. Answer all parts of this question.
- (a) Explain CIP and COP. (10 marks)
  - (b) Explain the advantages of stainless steel. (10 marks)

1. *Jawab semua soalan bahagian ini.*
  - (a) *Huraikan pendekatan HACCP untuk menjamin keselamatan makanan.*

*(5 markah)*
  - (b) *Dengan bantuan contoh jelaskan “Critical Control Point and Critical Limits” dalam pelan HACCP.*

*(10 markah)*
  - (c) *Bagaimanakah anda akan melaksanakan prosedur pemantauan dan tindakan pembaikan.*

*(5 markah)*
  
2. *Jawab semua soalan bahagian ini.*
  - (a) *Jelaskan klasifikasi detergen.*

*(5 markah)*
  - (b) *Senaraikan sifat sifat detergen yang diingini.*

*(10 markah)*
  - (c) *Senaraikan pelbagai kumpulan surfaktan dan peranannya dalam detergen.*

*(5 markah)*
  
3. *Jawab semua soalan bahagian ini.*
  - (a) *Jawab semua soalan bahagian ini.*

*(10 markah)*
  - (b) *Senaraikan perkara perkara yang perlu diambilkira dan perkara perkara yang tidak boleh dilakukan semasa mengendalikan sisa buangan makanan*

*(10 markah)*

4. *Jawab semua soalan bahagian ini.*
- (a) *Bincangkan faktor faktor yang anda akan pertimbangkan semasa memilih bahan sanitasi.*  
(10 markah)
  - (b) *Huraikankan had-had bahan sanitasi berasaskan klorin.*  
(5 markah)
  - (c) *Jelaskan mekanisma perencatan mikroorganisma oleh bahan sanitasi berasaskan klorin.*  
(5 markah)
5. *Huraikan pelbagai komponen Penilaian Risiko. Pada pendapat kamu adakan Penilaian Risiko perlu dilakukan, jelaskan.*  
(20 markah)
6. *Secara ringkas bincangkan kepentingan “aflatoxins”, “patulin” and “ochratoxin”.*  
(20 markah)
7. *Jawab semua soalan bahagian ini.*
- (a) *Jelaskan CIP dan COP.*  
(10 markah)
  - (b) *Terangkan kelebihan stainless steel.*  
(10 markah)