Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014

COURSE NAME	:	FOOD QUALITY ASSURANCE
COURSE CODE	:	BWD 20403
PROGRAMME	:	2 BWD
EXAMINATION DATE	:	DECEMBER 2013/JANUARY 2014
DURATION	:	3 HOURS
INSTRUCTION	:	A) ANSWER **ONLY FIVE (5)** QUESTIONS IN SECTION **A** B) ANSWER **ALL** QUESTIONS IN SECTION **B**

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

SECTION A

Q1 (a) A small medium enterprise producing blueberry tart has developed their own methods of evaluating quality which are either based on observation, touch or taste by the elders. An order received from overseas insists that before purchasing the product, the company should apply proper quality evaluation procedure based on science. Point out the concept and the three (3) aspects of quality for the evaluation by using the product as an example.

(7 marks)

(b) Name two (2) innovators that contribute towards the quality movement.

(1 mark)

(c) Differentiate between Food Safety and Food Quality.

(2 marks)

Q2 (a) Establish sampling inspection terms for three (3) types of defects in a company producing strawberry jam.

(7 marks)

(b) Explain the concept of Quality Control (QC) tools.

(2 marks)

(c) List two (2) Managment and Planning tools.

(1 mark)

Q3 Super Fizz Cola Company wants to use statistical process control (SPC) to monitor its bottle filling process. Every 20 minutes sample of four bottles from the production line is taken and the amount of cola in each bottle is measured. The results are reported in the **Table 1** below.

Table 1

Sample	Milliliters in each bottle			
1	351.2	350.9	350.6	350.7
2	350.3	351.0	351.1	350.8
3	351.4	350.9	351.3	351.2
4	350.8	350.5	351.1	350.1
5	350.6	350.9	351.4	351.1

(a) Determine whether volume of soda in a bottle a variable or an attribute?

(1 mark)

(b) What kind of control chart should be used to monitor the average volume of soda in each bottle? Determine the three-sigma control limits for this chart and plot the average bottle volume for each sample on that chart.

(7 marks)

(c) Is the process in-control with respect to the average volume? What action should be taken?

(2 marks)

Q4 (a) The heart of total quality management (TQM) is continuous improvement, which view all operation and activities as a process. Construct the process model diagram and explain how you would implement this model.

(7 marks)

(b) Describe generic ISO standard.

(1 mark)

(c) Indicate what is meant when an organisation states that they are "ISO 9000 certified".

(2 marks)

Q5 (a) Define process control in food processing.

(1 mark)

(b) Discuss the purpose of performing audit.

(2 marks)

(c) A company producing canned meat products is situated next to a slaughtering house. As an auditor of GMP with the Ministry of Health, how can you analyse the situation to ensure that the following organisations are producing safe, pure and wholesome food?

(7 marks)

Q6 (a) Why is HACCP important?

(2 marks)

(b) As an auditor, you will conduct an inspection to one of the food industry that already has the HACCP certificate; identify the issues that typically arise during the audit.

(7 marks)

(c) List two (2) hazards that became the main focus in the HACCP certification.

(1 mark)

Q7 (a) Define FoSIM.

(1 mark)

(b) Implementing HACCP and Halal Systems is the next logical step for food industries. HACCP systems ensure that the product is safe whilst the halal system ensures that the food can be consumed by anyone including non-Muslims. Identify the common elements of these two guidelines.

(7 marks)

(c) Explain one of initiative taken by Ministry of Health (MOH) to maintain food safety in Malaysia.

(2 marks)

SECTION B

Q8 As the best consultant in quality issue in Malaysia, you have been approach by a company producing pineapple tart for advice and consultation of the following:

(a) They were confused between the responsibility of quality control personnel and quality assurance personnel. Can you explain it to them with examples?

(4 marks)

(b) They gave you a list of their problems associated with poor service that they collected when they perform a survey from 100 customers and ask you to solve it for them.

(i) Illustrate by using the appropriate tool; find the potential cause of the problem(s) shown in Table 2.

(5 marks)

(ii) By using the Pareto diagram, show what is/are the main cause(s) of the problem faced by the company you find in (b) (i).

(5 marks)

Table 2

No.	Problem/Complaints	Cause	Number of Customer
1.	Their distributor do not appear to be well organised. They keep bringing the wrong order		12
2.	Service centre phones aren't answered quickly enough		4
3	Service centre staff don't always know what they are doing		19
4.	The receive broken package of the pineapple tart from the distributor		10
5.	The shape and size of the pineapple tart are not even		48
6.	Service centre staff seem distracted and under pressure		7

(c) Calculate the range of for each processing line as shown in Table 3 and provide conclusion on the range of values that you get.

Table 3 : Control Record of Weight

Processing Line	Observations (Weight a pack of tart pineapple in grams)			
	1	2	3	4
1	15.85	16.02	15.83	15.93
2	16.12	16.00	15.85	16.01
3	16.00	15.91	15.94	15.83

(5 marks)

(d) The company decide to use the ISO 9001:2008 quality management system as a solution. Explain at least three (3) sections in the ISO9000 that can be used to ensure that the problem and cause you find in (b) (ii) and (b) (iii) will not reoccur.

(6 marks)

Q9 A company producing pineapple jam wants to export their product to the Middle East. The company have requested your consultation in obtaining HACCP certification for the company.

(a) The company has assembled a HACCP team and has provided you with the description of the product and intended use as shown in Table 4.

Table 4: Product Description

1	Common name	Pineapple Jam
2	How is it to be used	Ready to eat
3	Type of package	Packed in glass jar, 300g
4	Length of shelf life, at what temperature	1 year if not open at 28 deg C
5	Where will it be sold	Retail and wholesale
6	Who are the consumers? What is its intended use	General public, may include children and infants
7	Labelling instructions	Once open keep refrigerated, ~4 deg C
8	Is special distribution control needed	Fragile product, handle with care
9	Ingredients	Sugar, Pineapple, Pectin, Citric acid, Sodium citrate, permitted colouring and flavouring
10	Method	Ripe pineapple are selected, washed, peeled and cut into small pieces. Then, it is blanched for 1-5 minutes and cooled under running water and then blended into pulp. The pulp is then boiled in water with a ratio of 40:60. Sugar and pectin is added to the batch while stirring rapidly. The mixture is boiled until it reaches 69° Brix. Then, citric acid, sodium citrate and permitted colouring and flavouring are added. While still hot, the mixture is filled in clean sterile glass jar and sealed air tight. The glass jar is then steriled in boiling water for 10 minutes. The pineapple jam is then allowed to cool at room temperature. The glass jar are then labeled and arranged into a box of 6. The box is then sealed for distribution

(i) Starting from the development of the process flow chart of making pineapple jam, construct in a step-by step manner what they should be doing before they implement the 7 HACCP principles.

(6 marks)

(ii) Choose two (2) of the steps in the process flow chart and conduct a hazard analysis including preventive measures for each steps.

(4 marks)

(iii) From the flow chart, identify the CCP(s) of the process by showing how do you arrive to the decision to select the step as CCPs and determine on the critical limits for the identified CCP(s).

(6 marks)

(b) They are also interested to implement GMP in their company but they are confused between GMP and HACCP. Explain the differences and similarities between GMP and HACCP.

(4 marks)

(c) Relate the importance of Halal certification implementation with the company interest based on your understanding what Halal certification is.

(5 marks)

- END OF QUESTION -

FINAL EXAMINATION

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Factors for Computing Three-Sigma Control Chart Limits

Sample Size n	A_2	D_3	D_4
2	1.880	0	3.267
3	1.023	0	2.575
4	.729	0	2.282
5	.577	0	2.115
6	.483	0	2.004
7	.419	.076	1.924
8	.373	.136	1.864
9	.337	.184	1.816
10	.308	.223	1.777
12	.266	.284	1.716