Idaho FFA
ASSOCIATION

Idaho Food Science and Technology Handbook

Purpose

To stimulate learning activities in food science and technology related to the food industry and to assist students in developing a good working knowledge of sound principles used in a team decision-making process.

Objectives

- To encourage FFA members to gain an awareness of career and professional opportunities in the field of food science and technology, marketing and management occupations.
- To give FFA members the opportunity to experience group participation and leadership responsibilities in a competitive food science and technology program.
- To help FFA members develop technical competence and personal initiative in a food science and technology occupation.
- To provide opportunities for FFA members to participate in activities where they gain an appreciation for cooperative effort in the food industry.

General Rules

1. Four participants will constitute an official team. All four scores will be used in the team score tabulation.
2. Participants must appear in official dress during the event.
3. Participants will be allowed 60 minutes to "create" their product based on the marketing scenario and 10 minutes to present to the judges. Following the presentation team members will answer up to 5 minutes of questions followed by a 2-minute critique.
4. Participants will be allowed 40 minutes to complete the objective exam.
5. Participants will be allowed 20 minutes to complete the sensory activities and 20 minutes to complete the complaint letter.
6. Each participant must have a clean, free of notes clipboard, two sharpened No. 2 pencils, and an electronic calculator.
7. Participants in need of special accommodations (disability or other health issues) must submit the Idaho State FFA Career Development Events Request for Special Accommodation Application found at the end of the General Rules and Regulations at least one month prior to the event.
8. National exams as reference materials will not utilize the most recent National Convention test items.
9. Members may participate in one event at a time. A member may not participate in overlapping CDEs during the Idaho FFA State CDE events in Moscow or State Leadership Conference in Twin Falls.

Format and Scoring

1. This career development event will involve 1220 total points per team and 205 points per individual. The team product development project will be worth 400 points per team and will not be included in total score for each individual, the objective test will be worth 100 points per individual, the practicum in food safety and quality will be worth 50 points per individual, the practicum in sensory evaluation will be worth 55 points per individual.

2. The food science and technology career development event will consist of four activities: A team product development project, an individual objective test, an individual practicum in food safety and quality, and an individual practicum in sensory evaluation.

1. Team Activity

- Each team will receive a marketing scenario describing a need for a new or redesigned product that would appeal to a potential market segment. The scenario will contain a description of the existing marketing situation, competition and potential target market segment to be served by the new product. It is the task of the team to design a new or reformulated food product or reformulate an existing product.
- Each team will be provided with a list of potential ingredients and all materials necessary to create a label for their product.
- The team will have 60 minutes to respond to the marketing scenario and identify which ingredients they would select in formulating their product. During this time, participants will also develop the front or principal display area of the package to reflect their new product and its market. The team will develop a nutritional information panel for their product. They will be provided with nutritional facts and information needed to calculate daily values.
- After the preparation period, each team member will contribute to a 10-minute oral product development presentation in which they will explain their choice of ingredients and product label. They will provide evidence as to how each of these meets the information provided in the market scenario.

- After the presentation, there will be a 5-minute question and answer period from the judges in which each team member will be expected to answer questions about the development of their particular food product. Following the questions time members will receive a 2-minute critique by the judges.
- Possible product categories:

1. Cereal	4. Side Dishes	7. Condiments
2. Snacks	5. Beverages	8. Desserts
3. Meals	6. Supplements	

Evaluations for Product Development Presentation

Package Display Component	100 points
Product Design	250 points
Response to Judge's Questions	50 points
TOTAL	**400 points**

2. Objective Test (Individual)

The objective questions administered during the Food Science and Technology examination will be designed to determine each team member's understanding of the basic principles of food science and technology. Team members will work individually to answer each of the 50 questions. Questions will be multiple choice, matching and true/false type questions. Each person will have 40 minutes to complete the examination. Each question will be worth 2 points for a total of 100 points per individual (400 points per team). The test will be taken from the last 5 years' National exams available, excluding the last national exam due to release date and based on a list of references.

3. Practicum in Food Safety and Quality (Individual)

Each participant will participate in a customer complaint letter activity. Participants will be given five representative consumer complaint letters received by a food processing company. In twenty minutes the participant must determine if the complaints involve a food quality or food safety problem. If the participant identifies that the letter describes a food safety problem, he or she must determine if the problem is biological, chemical or physical in nature. If the issue is food quality, no other markings should be made on the card. Each complaint letter will be worth ten points (five points for determining food safety or quality and five points for the cause of the problem) a total of 50 points per individual (200 points per team).

Evaluations for Complaint Letters **TOTAL** **50 points**

4. **Practicum in Sensory Evaluation (Individual)**

Each participant will participate in two sensory evaluation activities: aroma identification and triangle tests.

Identification of Aromas:

Participants will be given 5 aromas. Each aroma is worth 5 points for a total of 25 points per individual (100 points per team).

1. Apple	9. Coconut	17. Maple	25. Raspberry
2. Banana	10. Coffee	18. Molasses	26. Sage
3. Basil	11. Garlic	19. Nutmeg	27. Smoke (Liquid)
4. Butter	12. Ginger	20. Onion	28. Strawberry
5. Cherry	13. Grape	21. Orange	29. Vanilla
6. Chocolate	14. Lemon	22. Oregano	30. Watermelon
7. Cinnamon	15. Licorice (Anise)	23. Peach	31. Wintergreen
8. Clove	16. Lime	24.Peppermint	

Triangle Tests:

Three different triangle tests will be conducted. Participants will be provided with three samples, two of which are alike. Participants are expected to identify the different sample through aroma, visual cues, or textual differences. Participants will be asked to record their answers on the answer sheet provided. Each triangle test is worth 10 points for a total of 30 points per individual (120 points per team).

Tiebreakers: Should a tie occur in the overall team placing, the tie will be broken by the highest number of total points earned from the objective test (adding all four team member scores) will break the tie. If a second tiebreaker is needed, the combined team score on the complaint letter will be used. To identify the high individual for this event in case of a tie, the highest examination score will be used as the first tiebreaker, followed by the highest individual score on the complaint letter.

Allergy information: food products used in this event may contain or come in contact with potential allergens. Advisors must submit a special needs request form for participants with any allergies with certification at least a week prior to the event. The event committee will make all reasonable efforts to accommodate with food allergies.

References

Food Science: The Biochemistry of Food and Nutrition, 2006, Mehas & Rogers.

This curriculum contains a student text, student lab manual, teacher's annotated lab manual, and teacher's resource binder. All materials are available through the Glencoe Secondary Catalog: Family & Consumer Sciences.

Food Science and Safety, 1998, Seperich, Interstate Publishers, Inc.

Principles of Food Sanitation, 1999, Marriott, Aspen Publishers, Inc.

Principles of Food Science 4th Edition, 2015, Gard, Goodheart-Wilcox Publisher.

National FFA Food Science and Technology Career Development Event Exams from the previous five-year period, excluding the last national exam due to release date.

Awards

Awards are presented to teams as well as individuals based upon their rankings. The top 10 teams and individuals will be recognized. Individuals from 1st through 5th place will receive medals. Teams from 1st through 5th place will receive plaques.

Event Scoring	**Individual**	**Team**
Team Activity		400 points
Objective Test	100	400 points
Complaint Letter	50	200 points
Aroma Identification	25	100 points
Triangle Tests	30	120 points
TOTAL	**205**	**1220 POINTS**

FOOD SCIENCE AND TECHNOLOGY CAREER DEVELOPMENT EVENT SCORECARDS

For Idaho State Career Development Events, the included scantron cards will be used unless otherwise indicated. Additional cards provided are included for study purposes and use at local and district events.

Team Product Development Project Scorecard (400 Points)

CHAPTER	NAME	TEAM NUMBER

	Possible Score	Team Score
Package Display Components		
Use and development of nutrition label		
• Required information present	10	
• Correct calculations	10	
• Correct organization	10	
Use and development of the ingredient statement		
• Present	10	
• Correct order and all ingredients included	10	
• Location on package	10	
Use of principle display panel to convey information		
• All required components	15	
• Correct information	15	
• Location on package	10	
PACKAGE DESIGN SUBTOTAL	**100**	
Product Development Oral Presentation		
Cost of goods sold • Costing • Accuracy	20	
Nutrition • Communicate nutritional quality of product • Apply nutritional quality to health benefits	20	
Target audience • Identification of key consumer	20	
Quality control • Key quality attribute of consistent product • Examples: flavor, color, texture, net weight, size, etc.	20	
Marketing and sales • Communicated with future users • Promotions • Market location	20	
Product • Appearance • Texture • Shelf-life • Interaction of ingredients • Creativity	20	

Processing ● Description of how to make product ● Equipment ● Flow diagram, unit operations ● People	20	
Packaging ● Materials used ● Appropriate for use of product ● Creativity	20	
Food Safety ● Discussed potential hazards/concerns associated with products	20	
Formulation Concepts		
● How well did product match concept/product development scenario	30	
● Category	5	
● Platform	5	
Quality of Presentation		
● Equitable participation of team members	5	
● Organization	5	
● Use of time allowed	5	
● Professionalism	5	
● Presence & enthusiasm	5	
● Mannerisms	5	
Product Development Oral Presentation Subtotal	**250**	
Response to Judges' Questions		
Team Participation in Question Response ● All team members contributed	25	
Quality of Response Accuracy Ability to answer Originality Knowledge	25	
Response to Judges' Questions Subtotal	50	
TOTAL POINTS	**400**	

FOOD SCIENCE AND TECHNOLOGY CAREER DEVELOPMENT EVENT

FOOD SAFETY AND SANITATION PRACTICUM

Customer Complaint Letter

Assume you are responsible for the Food Safety and Food Quality at a major Food Company. Each team member will review five different consumer complaint letters received by a food processing company. You have 15 minutes to study the letters and answer the questions below for each letter.

Questions #1 and #2 relate to "Identification of a Food Safety or Food Quality problem." Question #1 will count for 5 points and Question #2 will count for 5 points. Therefore, each letter will count for a total of 10 points. The total point value for all 5 letters will be 50 points. Before you begin, make sure you write your name and chapter at the top of this sheet. Also, make sure you select the appropriate response for each question below

LETTER # 1

Question 1: (select one) Does the complaint indicate:

a. Food Safety Problem
b. Food Quality Problem

Question 2: (select one) Is the problem primarily:

a. Biological
b. Chemical
c. Physical

LETTER # 2

Question 3: (select one) Does the complaint indicate

a. Food Safety Problem
b. Food Quality Problem

Question 4: (select one) Is the problem primarily:

a. Biological
b. Chemical
c. Physical

LETTER # 3

Question 5: (select one) Does the complaint indicate:

a. Food Safety Problem
b. Food Quality Problem

Question 6: (select one) Is the problem primarily:

a. Biological
b. Chemical
c. Physical

LETTER # 4

Question 7: (select one) Does the complaint indicate:

a. Food Safety Problem
b. Food Quality Problem

Question 8: (select one) Is the problem primarily:

a. Biological
b. Chemical
c. Physical

LETTER # 5

Question 9: (select one) Does the complaint indicate:

a. Food Safety Problem
b. Food Quality Problem

Question 10: (select one) Is the problem primarily:

a. Biological
b. Chemical
c. Physical

Name _____Chapter_____

Food Science and Technology Career Development Event
Sensory Evaluation Practicum

1. Apple	9. Coconut	17. Maple	25. Raspberry
2. Banana	10. Coffee	18. Molasses	26. Sage
3. Basil	11. Garlic	19. Nutmeg	27. Smoke (Liquid)
4. Butter	12. Ginger	20. Onion	28. Strawberry
5. Cherry	13. Grape	21. Orange	29. Vanilla
6. Chocolate	14. Lemon	22. Oregano	30. Watermelon
7. Cinnamon	15. Licorice (Anise)	23. Peach	31. Wintergreen
8. Clove	16. Lime	24.Peppermint	

Part 1: Aromas 5 pts each 25 points total
DIRECTIONS: Write the name of the aroma in the space provided.

1._____

2._____

3._____

4._____

5._____

Part 2: Triangle Tests 10 pts each 30 points total
DIRECTIONS: Write a description of each product (i.e. beverage, cereal, etc.) and the three sample numbers for each product in the spaces provided. For each product, write the number of the sample that is different from the other two.

Product Description	**Sample Number that is different**
1._____	_____
2._____	_____
3._____	_____

Team Tabulation Sheet

School _____

Participant Number	Team Activity (400)	Objective Test (100)	Complaint Letter (50)	Aroma Identification (25)	Triangle Test (30)	Individual Total (205)
1	XXX					
2	XXX					
3	XXX					
4	XXX					
Team Total						

Team Tabulation Sheet

School _____

Participant Number	Team Activity (400)	Objective Test (100)	Complaint Letter (50)	Aroma Identification (25)	Triangle Test (30)	Individual Total (205)
1	XXX					
2	XXX					
3	XXX					
4	XXX					
Team Total						

Food Science - Form #713-3

Incorrect Marks ✓ ✗ ▬ ⊙ Correct Mark ●

Team Name

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team #

Code

Last Name

First Name

Objective Test

1	A	B	C	D	E	26	A	B	C	D	E
2	A	B	C	D	E	27	A	B	C	D	E
3	A	B	C	D	E	28	A	B	C	D	E
4	A	B	C	D	E	29	A	B	C	D	E
5	A	B	C	D	E	30	A	B	C	D	E
6	A	B	C	D	E	31	A	B	C	D	E
7	A	B	C	D	E	32	A	B	C	D	E
8	A	B	C	D	E	33	A	B	C	D	E
9	A	B	C	D	E	34	A	B	C	D	E
10	A	B	C	D	E	35	A	B	C	D	E
11	A	B	C	D	E	36	A	B	C	D	E
12	A	B	C	D	E	37	A	B	C	D	E
13	A	B	C	D	E	38	A	B	C	D	E
14	A	B	C	D	E	39	A	B	C	D	E
15	A	B	C	D	E	40	A	B	C	D	E
16	A	B	C	D	E	41	A	B	C	D	E
17	A	B	C	D	E	42	A	B	C	D	E
18	A	B	C	D	E	43	A	B	C	D	E
19	A	B	C	D	E	44	A	B	C	D	E
20	A	B	C	D	E	45	A	B	C	D	E
21	A	B	C	D	E	46	A	B	C	D	E
22	A	B	C	D	E	47	A	B	C	D	E
23	A	B	C	D	E	48	A	B	C	D	E
24	A	B	C	D	E	49	A	B	C	D	E
25	A	B	C	D	E	50	A	B	C	D	E

Sensory Evaluation Practicum

Triangle Tests

1	2	3	4
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Aromas

1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

Problem Solving / Math Practicum

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E

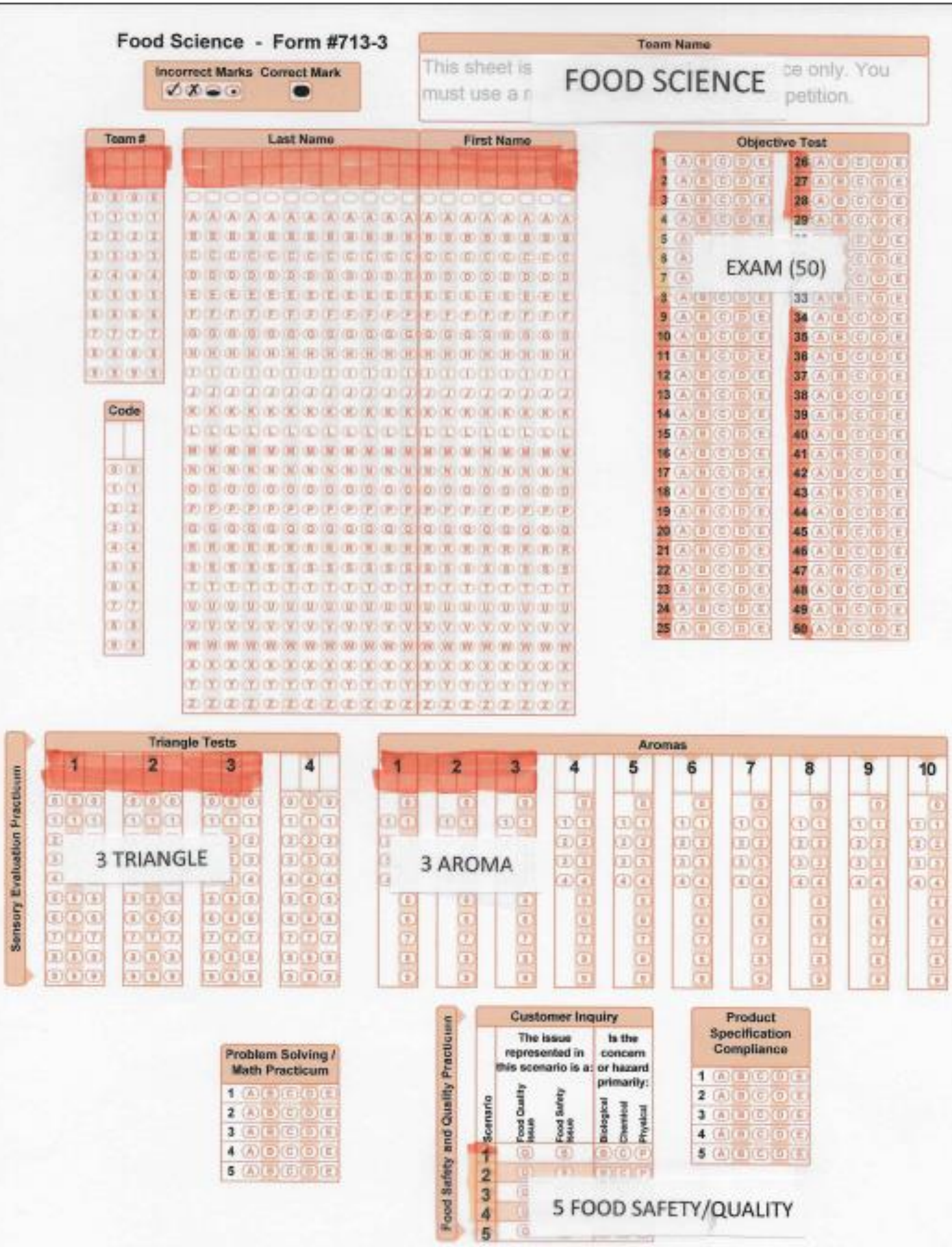
Food Safety and Quality Practicum

Customer Inquiry

Scenario	The issue represented in this scenario is a: Food Quality Issue	Food Safety Issue	Is the concern or hazard primarily: Biological	Chemical	Physical
1	Q	S	B	C	P
2	Q	S	B	C	P
3	Q	S	B	C	P
4	Q	S	B	C	P
5	Q	S	B	C	P

Product Specification Compliance

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E


Food Science - Form #713-3
Incorrect Marks
Correct Mark
Team Name
This sheet is
must use a r
FOOD SCIENCE
ce only. You
petition.
Team #
Last Name
First Name
Code
Objective Test
EXAM (50)
Sensory Evaluation Practicum
Triangle Tests
3 TRIANGLE
Aromas
3 AROMA
Problem Solving / Math Practicum
Food Safety and Quality Practicum
Customer Inquiry
The issue represented in this scenario is a:
Food Quality Issue
Food Safety Issue
Is the concern or hazard primarily:
Biological
Chemical
Physical
Scenario
5 FOOD SAFETY/QUALITY
Product Specification Compliance