Future Food Scientists of America Food Science and Technology CDE Food Science Knowledge Test

Fill in your name on the scantron sheet.

Choose the selection that is most correct. Use the Scantron to reflect your choice.

- 1 GAPs with respect to food are:
 - a Good Agricultural Practices
 - b Good Animal Practices
 - c. Good And Pure.
 - d. A store where cool clothes are found.
- 2 The importance of GAPs is:
 - a they make sure that cultivars are correct.
 - b. they provide guidance on safe food production.
 - c they provide guidance on which animals are best to use
 - d they provide guidance on safe farm management.
- 3 HACCP principles are designed to:
 - a. identify and control feces in animal products.
 - b. control how people wash their hands.
 - c. identify and control potential contaminants in foods.
 - d identify and manipulate nutrients in foods
- 4 Hazards in foods include:
 - a physical
 - b chemical.
 - c. biological.
 - d all of the above
- 5. A critical control point in the food processing flow is:
 - a a point that can be controlled to make sure a food is safe to eat.
 - b. a point that if it is not controlled the food will be out of specifications.
 - c. a point that if not controlled will result in an unsafe food.
 - d. all of the above.
- 6. A hazard analysis determines:
 - a. where hazards could occur.
 - b. assesses their severity and human health risk.
 - c determine a preventative measure.
 - d what a critical control point does
- 7 An example of a critical limit:
 - a. hand washing
 - b. cooking time and final temperature
 - c hairnets
 - d all are critical limits

8 An important consideration in controlling bacterial growth from farm to table: a keeping food at room temperature b keeping food cold c keeping food fresh d keeping food cooked	
9 Perishable foods should be kept below 40°F. The reason is: a bacteria grow slowly at this temperature. b produce ripens slower at this temperature. c decay is slowed. d all of the above.	
10 Who is least at risk for food borne illness? a 4 year old child b 17 year old FFA student c pregnant woman d elderly person	
11. Which of these is not one of the 4 C's of food safety? a. Cross contaminate. b. Clean. c. Cook. d. Chill.	
12. How much fat is in 2% milk? a. there is not any fat in 2% milk. b. 1.0% c. 2.0% d. 3.25%	
13. On a nutritional label, Daily Reference Values refer to: A. The amount of calories. B. The amount of vitamins. C. The amount of vitamins based on a 2000 calorie diet. D. The amount of fat, carbs, protein, cholesterol, and sodium based on a 2000 calorie diet. E. The amount of vitamins C, A, calcium and iron based on a 2000 calorie diet.	
Questions 14 – 18 use the following for responses. They are sections of the Food Guide Pyramid. A. Fats, oils, sweets B. Meats, poultry, beans, eg protein foods C. Fruits D. Vegetables E. Grains, bread, cereals etc.	
 This section of the Food Guide Pyramid contains the foods that should be consumed in the larges amounts. This section contains foods that should be eaten the least. 	t
16 This section contains foods that can be high in fat and protein. 17 This section contains foods that are high in fiber and are sweet.	

18 This section contains foods that are high in vitamins and fiber.

The following questions refer to the nutrition label below.

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		30 P	1000				
	kricspo I9 • C		0.0		38.4		
	建造量		1919 H		(en		

a Vitamin A

24. This product would NOT be considered "low" in:

Nutrition Eachs	19 There are how many servings in this package?
Serving Size 1/2 cup (114g)	$oldsymbol{a}: oldsymbol{1}$.
Servings Per Container 4	b. 2
Amount PerService	c. 3.
Calories 90 Calones from Fat 30	d. 4.
"% Daily Yake* Total Fat 3g 5%	20 If you were to eat the entire package, how many calories would you
Saturated Fat 0g 1 0%	obtain?
Cholesterol (mg 0%	a. 30.
Sodjum 300mg 13%	b. 90
Total Carbohydrate (3g 4%	c 180
Dietary Fiber 3g 1 12%	d. 360.
Sugars 3g	
Protein 3g	21 About what percentage of calories does fat contribute in this product?
Vilamin A 80% • Vitamin C 60%	a. 20%
Calcium 4% · iron 4%	b. 33%
Percent Daily Values are based on a 2 000	c. 50%
calone diet. Your daily values may be higher or lower depending on your calone needs.	d. 66%
Calones 2000 2500 Total Fat: Less than 65g (R0g)	22 Based upon a 2000 calorie diet, this product contributes about what
Sat Fat Less than 20g to 25g	percentage of the Percent Daily Value for fat?
Cholesterol Less than 300mg 300mg Sodium Less than 2,400mg 2,000mg	a. 5%
Total Carbonycrate 300g 375g	b. 33%
	c. 50%
Cakries per gram: Fat 9 * Carbóhydrate 4 * Protein 4	d. 66%

d Sodium

	a. fat.	b. sodium.	c. cholesterol.	d none of these
25	Could this product be a Yes, it is light in b No, we do not k		re it to.	
2 6.	How many calories are a 10 calories.	e in 10 grams of a fo b. 18	ood that is 20% fat, 20% c. 26	protein, and 60% carbohydrate? d. 50.
27.	Which nutrient provid a carbohydrates	es the highest densit b fat	y in calories?	

b. Vitamin C. c. Dietary Fiber

28.	Food additives are added for a variety of reasons. Which of these is not one of them? a to keep it flowing as in salt from a shaker b to keep it colorful c to keep it fresh d to keep it wholesome e all are reasons	
29.	Who regulates food additives? a USDA b FDA c State of Iowa d No one.	
20 \		
.5U.,	GRAS stands for: a Generally recognized as salty	
	b Generally recognized as safe	
	c. Generally recognized as secure	
	d Generally recognized as sure to cause cancer	
31.	Salt, sugar, spices, and other additives are considered:	
	a okay to use in foods in unlimited amounts. b. GRAS.	
	c big contributors to calories	
	d unsafe as additives	
22	A 4:001	
32.	A difference between spoilage bacteria and pathogenic bacteria is: a one can make you sick	
	b. one produces gases.	
	c. one is introduced to the food unnaturally.	
	d one occurs in the food naturally.	
33	Bacteria reproduce in a manner called:	•
. د. د.	a. indeterminant growth.	
	b. binary fission	
	c non exponential	
	d. sexually.	
34.	Which is not used for food preservation?	
	a. drying.	
	b. canning.	
	c freezing	
	d. irradiation.	
	e. all are ways to preserve foods.	
35.	When food deteriorates it is typically caused by?	
	a. enzymes	
	b. pathogenic bacteria	
	c bad air	
	d. poor handling.	
36.	Canned food such as green beans often have a set of weird numbers and letters stamped on the	
conta	ainer. What is this called?	
	a. sell by date b. use by date c. closed date labeling d. xenophobia.	

- 37 If you find a product in the grocery that says "sell by date" and it is a week beyond this date, what should you do as a responsible citizen?
 - a buy the product it is probably on sale.
 - b tell a store employee that it is beyond code date.
 - c choose another product with a more current date.
 - d walk away and shop elsewhere.
- 38. The mechanism of freezing and refrigeration in preserving food is:
 - a refrigeration kills microorganisms
 - b. freezing kills all microbes.
 - c. cold slows the growth of most microorganisms.
 - d cold food tastes better.
- 39. Fast food is:
 - a always unhealthy
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 - c high in cholesterol.
 - d all of these.
 - e may be high in some of these or may not be high in these
- 40. The two nutrients that should be consumed in the least for a healthy diet are:
 - a. carbs and sugars.
 - b. cholesterol and saturated fats.
 - c carbs and fats
 - d. proteins and carbs...

FFA

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15	This section contains foods that should be eaten the least A
16 17	This section contains foods that can be high in fat and protein B. This section contains foods that are high in fiber and are sweet C.
18	This section contains foods that are high in vitamins and fiber. D.

The following questions refer to the nutrition label below

Nutrition Facts	19 There are how many servings in this package?
Serving Size % cup (114g)	a. 1.
Servings Per Container 4	b. 2. c. 3.
Amount Per Serving	\mathbf{d} . \mathbf{d}
Calories 90 Calones from Fat 30	
% Daily Value* Total Fat 3g 5%	20. If you were to eat the entire package, how many calories would you
Salurated Fat 0g 0%	obtain?
Cholesterol(X)(g) 0%	a. 30
Sodium XXIIIg 13%	b. 90. c. 180
Total Carbohydrate 130 4%	d. 360.
Dietary Fiber 3g 12% Sugars 3g	
Protein 3g	21 About what percentage of calories does fat contribute in this product?
	a. 20%
Vitamin A 80% • Vitamin C 60% Calcium 4% • Iron 4%	b, 33%
* Percent Daily Values are based on a 2,000	c. 50% d. 66%
calone tiet. Your daily values may be higher or lower depending on your calone needs:	u 00%
Calones 2,000 2,500	22 Based upon a 2000 calorie diet, this product contributes about what
Total Fat Less then 65g 90g Sat Fat Less than 20g 25g	percentage of the Percent Daily Value for fat?
Choestern Less than 300mg 300mg Sodium Less than 2,400mg 2,400mg	a 5%
Total Carbotydrate 3099 375g Distany Fixer 25g 30g	b 33%
Cakvies per gram:	c. 50% d. 66%
Fat 9 • Carbohyd ate 4 • Protein 4	u 00%
23. This product can be called	a "good source" of at least one nutrient. Which is not one of the nutrients?
a Vitamin A. l	D. Vitamin C. c. Dietary Fiber d. Sodium
24 Till Andrew MANOT	1
24. This product would NOT a fat	be considered flow in: b. sedium c cholesterol d none of these.
a iai	5. Societies Confession de none of these.
25. Could this product be called	ed "Light"?
a Yes, it is light in cho	
b. No, we do not know	what to compare it to
26 Hayr many colories are in	10 grams of a food that is 20% fat, 20% protein, and 60% carbohydrate?
	2. 18 c. 26 d. 50.
w. 10 valuityo.	
27 Which nutrient provides the	
a carbohydrates	b fat c protein

	a to keep it flow b to keep it colo c to keep it fres d to keep it who e all are reason.	h. plesome	shaker	
29	Who regulates food a USDA	additives? baFDA	c. State of Iowa	d. No one
30.	*		nse cancer	
31.				
32.	a one can makeb one producesc one is introdu	you sick.	nd pathogenic bacteria is: urally	
33.	Bacteria reproduce a indeterminant b binary fission c non exponent d sexually	growth		
34	Which is not used for a drying b canning c freezing d irradiation. e all are ways to	or food preservation?		
35.	When food deteriors a enzymes b pathogenic ba c bad air d poor handling		sed by?	
	Canned food such a tainer. What is this a sell by date		c closed date labeling	_

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 - d. proteins and carbs.

May 25, 2004

To:

Sausilito Sauce and Sandwich Company

Ames, IA 50011

From:

John A. Consumer, Unhappy

Subject:

Discolored sandwich wraps

To Whom It May Concern:

I recently purchased your Ready to Eat, Slammin' Sammy's Sausilito Sourdough Spam Sandwich Wrap. The "buy by" date was listed as June 10, 2004. The product looked very tasty in the wrapper. I noticed that this one sandwich wrap was not vacuum sealed like the rest of the sandwiches that were on display.

Upon opening the wrapper, I noticed that the sourdough bread wrapper had turned a bluish color and was fuzzy Upon eating the sandwich, a negative flavor came over my taste buds

I think that there was something wrong with the sandwich Was it safe to eat? What would have caused the product to change color and get fuzzy like it did?

Thank you for your assistance.

FFA
Future Food Scientists of America
Food Science and Technology CDE
Complaint letter response activity
Name
Team
I. After reading the letter, please circle the correct answer to each question

Name	
Team	·
I. After reading the letter, please circle the correct answer to e	each question
1 What was the main problem with the product? a Food safety problem b Quality problem c Water activity problem d All of the above e Only two of the above	(5 pts)
2 What was the main cause of the problem? a Spoilage by mold b Pigment change in the bread c Ingredients were incorrect d Allergen problem	(5 pts)
II. What solution do you propose to correct the problem?	(10 pts)
	,

FFA Future Food Scientists of America Food Science and Technology CDE

Product Development Team Event

Consumers are interested in their health and the impact that food has on their general well being. Additionally, consumers are demanding that food be easily and rapidly prepared. This has lead to the increase in meals consumed away from home. However, meals consumed away from home are often higher in fat and calories. The fast food industry has begun to address the needs of health conscious consumers by providing a variety of fat and calorie reduced products. However, one still must travel to the restaurant to obtain this food.

As a nation, the people in the United States are becoming deficient in an important nutrient – calcium. Calcium is found in a variety of foods including dairy products such as milk and cheese, green leafy vegetables and some canned fish products such as salmon or sardines. The recommended amount of calcium that one should consume is 800 - 1200 mg. Four glasses of milk or 4 ounces of cheese will provide that amount.

Heart disease and other cardiovascular diseases are the leading cause of death in the country. Consumption of foods that are high in fat, sodium, and cholesterol historically has been associated with these diseases. Additionally, lack of exercise has serious ramifications for heart disease. Adequate intake of fiber in the form of insoluble (vegetables and whole grains) and soluble fiber (mainly in fruits) appears to be important in reducing the risk of heart disease.

Your task will be to develop and market a healthy fast food main course that can be sold at the grocery and stored in the freezer. The food should be marketed toward the busy family and:

- a be heart healthy
- b. contain half the daily requirement for calcium
- c be high in fiber
- d. be flavorful
- e be reasonable in price.

A ten minute talk with all members of the team contributing will describe your product, the marketing tools, the nutritional and ingredient labels, and why you think the product is a go

Evaluation will be based upon successful application of these requirements and defending your choice in the solution to these

Things to think about....

How are you going to heat your main dish?

what does "Heart Healthy" mean?

Where can you get calcium and/or in easily usable forms?

What is flavorful in a main meal - spicy, savory, meaty, grainy, fresh?

What is the approximate price of a normal main course? How do you determine this?

Fill in the nutrition label on the back with your product information

Ingredients are always listed in order of amounts – largest first

What are the food safety concerns with this product?

What claims can you make on the front of the package?

Websites that should be important to you...

http://food.oregonstate.edu/food.html

http://www.nal.usda.gov/fnic/etext/000020.html

http://www.calorieking.com/foods/

http://www.fda.gov/opacom/backgrounders/foodlabel/newlabel.html

http://www.fda.gov/fdac/features/2002/502_food.html

Product De	velopment	Presentati	on So	corecard
Team			_	

- 1. Nutrition label
- Shelf-life, stability and packaging
 Sensory characteristics and quality
 Marketing/advertising plan

	Possible Points	Team Points
Package design	10	
Use, development and adaptation of		
nutritional label		
 Use and development of the ingredient 		
statement on educational panel		
Use of principle display panel to		
convey information		
Oral Proposal	10.5	是 中国 (2015年) 1995年 -
How does the product meet market needs?		
How does the product address target		
audience?		
The presentation address the following		
product concerns:		·
• Economics – cost?		
Nutrition		
Health		
Formulation		
Participation of all members	The state of the s	
Response to Judges' questions/	10	
Time management in question response		
Organizational ability		
TOTAL SCORE	80	

Team Name:	
Team Number:	

Scoring Rubric for Product Development FFA Food Technology Contest

Please circle the statement that best reflects the performance of each group's product and presentation. Use the scale to assign a score for each criterion. After each presentation, please tally the scores in the far right column and place the total at the bottom of the second page.

	PRODUCT SE	NT	DDODUCE			·
CRITERIA INTO STORES			UNDER	PRODUCT PROD		
CIGIERIA		•	REVISION	LAB	FOR FURTHER	TEAM
Product Design	réveré la debier		TEL VIBIOIT		TESTING	SCORE
And a control of the	D 1 :			5.美国安全的		Marin best
Target Market	Packaging		Mentioned		Did not	
• Packaging	design and		target market,		consider target	
design	product cost matched target		but with		market in	
• Product cost	market		inappropriate		package	
Shelf life	Shelf life		package design		design or	
Ease of	mentioned.		or product cost		product cost	
preparation	Easy to		Moderately easy		Difficult or	
i	prepare		to prepare		many steps in	
	20	16	12		preparation	
Nutrition Label	Scale Control of the		14	8	4	to the first of the same of th
Distance Lanci	angrements					
Did the nutrition label	contain analysis	of: Proteir	ı, Fiber, Fat, Satura	ted Fat, Choles	sterol and Calories	
Diameter (see injust 1400)	caremate appropr	ate servin	g size for the produ	ct - diameter	Description of the con-	
• Protein	Product		Product		Product	
• Fat	provided		provided		provided low	
 Saturated fat 	high amounts of targeted		moderate		amounts of	
 Calcium 	nutrients		amounts of	ļ	targeted	
• Fiber	Serving size		targeted		nutrients	
• Calories	mentioned		nutrients			İ
	mentioned					
• Serving size	20	16	12			İ
• Claims		10	12	8	4	
Sensory Charact	eristics			again sa a la ca		
	Used		Used some	Section 19 Company of the Section 19 Company	Used sensory	
• Appearance	appropriate		sensory terms,		terms, but	
• Texture	sensory		but some errors.		inaccurately	
	evaluation		Described	İ	Omitted many	
• Flavor	terms		product nearly		aspects of	
	Completely		completely.		product	
	described		• •	}	description.	
	product	ĺ			-totripeon.	
	5	4	3	2	1	

(Please turn over)

Name	School
Aromas	
1 Cinnamon	17 Menthol
2 Peanut Butter	18 Grape
3 Chocolate	19. Garlic
4 Maple	20 Peppermint
5. Oregano	21. Clove
6 Basil	22. Nutmeg
7 Lemon	23 Ginger
8 Lime	24 Molasses
9 Orange	25 Wintergreen
10 Vanilla	26. Banana
11 Almond	27. Coconut
12 Smoke (liquid)	28 Lilac
13 Cherry	29 Raspberry
14 Pine	30. Strawberry
15. Onion	31 Licorice (anise)
16. Butter	9

Using the key above, identify the aroma of each sample. Place the <u>NUMBER</u> of the aroma on the line below that corresponds with the station letter. There is only one aroma at each station

Station	Aroma number
Α	
\mathbf{B}	
C	
D	
E	·
F	
G	
H	
I	-
J	N



NASA Food Technology Commercial Space Center Product Development for Space Travel

BACKGROUND

NASA is designing a terrestrial habitat intended for testing Advanced Life Support (ALS) technologies, techniques, and procedures for long duration missions in space to the moon and Mars where all life support systems will be recycled and reused. ALS involves the use of hydroponically grown crops to supply and regenerate air and food for the crew

Crops grown on-board will be used for air and water recycling and also serve as a food source. Space food development problems include weight and volume restrictions, nutrition, crew acceptability and consumption, and management of food-generated waste. One of the main challenges of long-term space flight will be to obtain a menu with sufficient variety and acceptability from a limited number of plant sources.

Plants to be grown include wheat, white potato, soybean, sweet potato, peanut, rice, tomato, lettuce, carrot, chard, radish, spinach, green onion, dry beans, and cabbage. Crops were selected based upon their ability to produce maximum edible biomass, to maximize space and light, as well as upon the nutrients they contain

Read more about the Advanced Life Support Systems at http://advlifesupport.jsc.nasa.gov. Learn about the NASA Food Technology Commercial Space Center at ISU at http://www.ag.iastate.edu/centers/ftcsc.

OBJECTIVE

Your task is to develop a food product from the available ingredients. Your product should be nutritious, easy to eat, have few crumbs, require minimal time for preparation, be easy to prepare, and have satisfactory sensory characteristics.

METHOD

With your team, create a food product from the ingredients supplied to you. Your team should develop a product name, consider the requirements for use in space, and evaluate the appearance, texture, and flavor of the final product.

After your team develops and evaluates your product, your team will present an oral report (5-10 minutes) to the rest of the participants and share the product they developed.

RULES

Your team will have 60 minutes to develop your product. You will be allowed to use only 4 ingredients. Water, spices and herbs, salt and pepper, soy sauce, and sugar are available as resupply ingredients from Earth. Select 1 item from each of the following categories:

Bread	Beans	Greens	Resupply Items	
Tortillas	Pinto beans	Lettuce	Tomato sauce	
Rice cakes Kidney bea	Kidney beans	Radishes	Ranch dressing	
	Black beans	Green onions	Cheese	
-	Soybeans	Carrots	Sour cream	
		Tomatoes	Peanut butter	

QUESTIONS THAT YOU MUST ANSWER

- 1 What nutrients does your product provide? You should be able to get this information from searching the web. Also, the website www nal usda gov/fnic has a searchable food composition database
- 2. What does the nutrition panel look like?
- 3 What are critical factors to the safety of this product from a microbiological standpoint?

EVALUATION

 - manipa	72.11.1.	11000

Evaluation: Rate your product on the Assessment Form for: Sensory Characteristics (appearance, texture, and flavor) Ease of Eating and Crumbs Ease of Preparation

MARKETING PRESENTATION

You should have a product container mock up for the evaluation.

Each team member should present at least one of the following aspects of food product development for space: utilization of available ingredients, nutrition, ease of preparation, ease of eating and crumbs, and sensory characteristics, answers to the questions.

Reitmeier and Beattie 2005