

Name: _____ Student ID _____

**Prince of Songkla University
Faculty of Engineering**

Exam: Mid Term, Semester I
Date: October 14, 2016
Subject: 230-560 - Food Unit Operations

Academic Year: 2016 – 2017
Time: 1:30 – 4:30 PM
Room: Robot

ทฤษฎีในการสอบโทษขั้นต่ำคือ ปรับตกในรายวิชาที่ทฤษฎี และพักการเรียน 1 ภาคการศึกษา

Instructions: This is a Closed Book exam consisting of 9 pages (not including the cover sheet). The points for each problem are not distributed evenly. Place your name and the student ID number on every page. Students are allowed to use only a pen or pencil and a calculator.

Points Distribution (For Grader Only)		
Part	Points Value	Score
1	35	
2	15	
3	25	
4	16	
5	40	
6	45	
7	10	
Total	186	

Exam prepared by
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October 14, 2016

**PLEASE CHECK TO MAKE SURE THAT
YOU HAVE ALL 9 PAGES OF THE EXAM BEFORE BEGINNING.
GOOD LUCK!**

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I. True and Faults (T/F). If Faulty, make the statement True. (35 points)

- 1. Frito-Lays® is the world's largest snack food company with Americans alone consuming over \$6 billion a year.
- 2. Meat must be cooked to at least center temperature of 60°C to ensure proper destruction of microbes and bacteria.
- 3. Red/purple berries are a good source of Lycopene.
- 4. Food not only provides calories for the body, but it also promotes growth, build tissues, stimulate hormones, and contribute to the well-being of the human body and mind.
- 5. Washing fruits and vegetables with soap or detergent is not recommended.
- 6. Olive oil is a good source of mono-saturated fatty acids.
- 7. Green leafy vegetables are good sources of Vitamin C, Foliates, Vitamin K, Calcium, Iron, Magnesium, and Alpha and Beta-carotene.
- 8. Popcorn was first developed by the Chinese.
- 9. Vitamin E can be found in vegetable oils and avocado.
- 10. There are less than 30,000 wine and champagne labels around the world.
- 11. Chicken requires a lower *safe minimum cooking temperature* than beef.
- 12. Safe storage temperature for fresh fruits and vegetables in the refrigerator should be at 4.4°C or higher.
- 13. The original type of *sushi*, known today as *nare-zushi*, was first developed in Central Asia, spread to South China, before its introduction to Japan.
- 14. Milk are often pasteurized using HTST process at 82°C for 15 sec, while UHT is processes at 135-150°C for 4-15 sec.
- 15. There are 22 known amino acids with 8 being *essential amino acids*.
- 16. Consumption of contaminated produce can lead to *foodborne illness*, often called "*food poisoning*."
- 17. Vitamin C can be found in Citrus fruits, green vegetables, and potatoes.
- 18. The first truly modern bread was founded in Rome around 1,000 BC.
- 19. France is the largest producer of wine, followed by the United States and Chile.
- 20. Tomatoes are a good source of Lycopene.
- 21. Dairy products are a major source of calcium, protein, and vitamin A.
- 22. To extend shelf-life of milk, a sterilization process at 116°C for 20 minutes is used.
- 23. Sweets or *confectioneries* are favorites despite having low nutritive value, high -sugar content, and tendency to cause tooth decays and obesity.
- 24. The two main of sources of sweetness for hard candies such as Halls® and Sugus® are sugar and fructose syrup.

- ___ 25. Swensen's was founded in San Francisco, United States in 1948 by Earle Swensen with the motto of "Quality, Quantity, and Value for their Money."
- ___ 26. Shear thinning is the process in which the viscosity of the gelatinized starch paste increases.
- ___ 27. Pudding can be made by adding cold water to pre-gelatinized starch.
- ___ 28. Corn starch can be converted into fructose using acid, heat, and enzyme (producing corn syrup).
- ___ 29. Gel formation is the result of junction zone formation.
- ___ 30. Starch is found in granules which have amorphous and crystalline regions.
- ___ 31. Amylopectin is in the form of linear chains and amylose is highly branched.
- ___ 32. Water activity is the ratio P/P_v .
- ___ 33. Retrogradation is the process in which water is squeezed from the gel as the starch begins to interact and the junction zone collapses
- ___ 34. Proteins and starches are polymers, which will be in a rubbery state above T_g and glassy state below T_g .
- ___ 35. Cornflakes, which have a water activity (a_w) of 0.10, will gain moisture in a 5% RH environment.

II. Fill in the blanks (15 points)

1. The five basic components of food consist of: _____, _____, _____, _____, and _____.
2. Starch gelatinization takes place in the presence of _____, _____, and _____.
3. Plants store their surplus energy in two forms: _____ and _____.
4. The process in which water seeps (releases) from the gel onto its surface is called _____ or weeping.
5. Starches in their natural form provide _____, _____, _____, and _____.

III. Answer the following questions based on your trip to Tesco Lotus, Hat Yai. (25 points)

(1) Name 6 brands (or types) of salty snacks. (3 points)

(2) Name 4 examples dessert snacks and 2 of its major ingredients. (4 points)

(3) Name 3 brands of ice cream and what ingredient is used to give ice cream its smooth texture?
(3 points)

(4) Name 4 brands of soft drinks and what makes it sweet (do not use sugar).
(3 points)

(5) Name 6 types (plants) of cooking oil. **(3 points)**

(6) List 8 types of fresh fruits in their English names. **(4 points)**

(7) Name the 5 main groups of products found at Lotus Bakery. Which is the best-selling item? **(5 points)**

IV. List the 8 essential amino acids and give at least one protein function for each amino acid. (16 points)

Amino Acid	Protein Functions

V. FOOD LAB COOKING: Answer the following questions in ENGLISH.
(40 points)

1. Discuss which cooking method you think is the best for chicken wings and why.
(10 points)

2. Describe how your team made your crepe. Draw your crepe design. What you would do differently to make it better the next time. **(10 points)**

3. Describe how you made your Pizza using the bread slices. Describe the difficulties and problems in making the pizza. What you would do differently to make it better the next time. **(10 points)**

4. Describe how you made your Sandwich. Give it a NAME. DRAW you sandwich presentation. Estimate the material COST and the PRICE that you would sell it for to make a good PROFIT. **(10 points)**

**VI. Answer the following questions from the FOOD COMPANY PRESENTATIONS.
(45 points)**

(1) Name the 7 companies or food brands that were presented by you and your classmates and list 3 major products, type of products, flavors of the products, or restaurant franchise (brands) by each company. **(21 points)**

(2) Answer the following questions. **(24 points)**

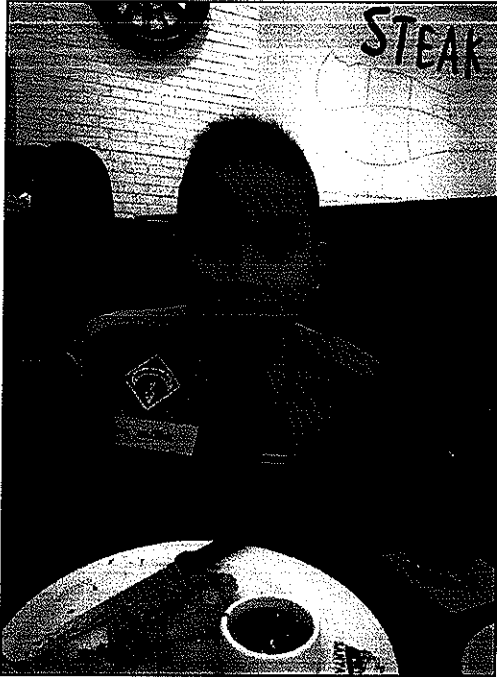
- 2.1 Which company places product to more than 50,000 shops across Thailand?
(2 points)
- 2.2 What company sells more than 1 billion bottles in 2557 and is involved in the Thailand Carbon Trust program?
(2 points)
- 2.3 As one of its Core Value, this company places a significant importance on “ความจริงใจ”? (2 point)
- 2.4 What are the 4 areas of food products is Oishi involved in?
(4 points)
- 2.5 Which company began by producing animal feed and now have products like Perfecta dog food? (2 points)
- 2.6 Name 3 countries in which S&P have restaurants in? (2 points)

- 2.7 What are the 4 areas of food products is Thai Bev involved in? (2 points)
- 2.8 List the 4 of the 6 core values of S&P. (4 points)
- 2.9 Which company has more than 100 Billion Baht of revenue in 2558?
(2 points)
- 2.10 What is the Parent Company of Farm House and what is the main ingredient that led to the development of Farm House's products. (2 points)

**VII. Answer the following questions about Food Ingredients and Functionalities
(10 Points)**

1. Select **2 of the 7 products** that were posted in the Facebook by you and your classmates in the Food Ingredients and Functionalities assignment. List the **THREE MAJOR** Ingredients and each of its Functionality in each product (not including water, unless specified). Underline the #1 ingredient in each product. **(10 points)**

Bonus: Where was the picture below taken (be specific which location)? (4 points)



Congratulations! End of Exam!