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BSC ENGINEERING: SECOND SEMESTER EXAMINATIONS, 2016-2017

**DEPARTMENT OF FOOD PROCESS ENGINEERING
FPEN 402. ENGINEERING AND DESIGN OF FOOD PROCESSES IV. ANIMAL
FOODS. (THREE CREDITS)**

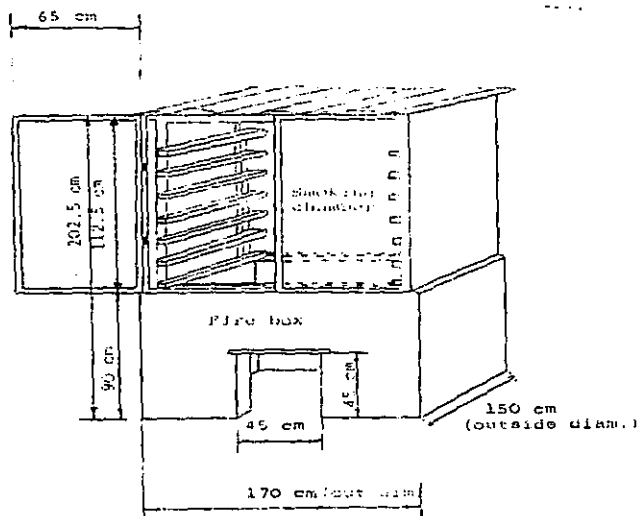
INSTRUCTIONS:

TOTAL TIME THREE HOURS.

ANSWER FIVE QUESTIONS

1.
 - a. The design and construction of areas in the plant where slaughtered animals are dressed should have certain features. Discuss with reasons.
 - b. Food drying and smoking systems are important in the development of quality in animal products. Comment on the application of the system in Figure 1 below.

Figure 1.



2.
 - a. You have been appointed as the District Food Processing Engineer of Ada. One of the communities along the coast is involved in fish processing. Discuss in detail

- (with diagrams) the engineering and design issues and opportunities you may encounter.
- b. Using their growth patterns, delineate the general characteristics of fish and propose the processing options which apply to each category of fish?
- 3.
- a. Discuss the factors affecting the design, operation and choice of thermal processing equipment.
- b. Retorts are important in the food industry. Using the diagrams below (Figures 2 and 3) identify the type of retort and the parts labelled 1-3 and 1-8. Describe the principles in the operation of batch retorts.

Figure 2

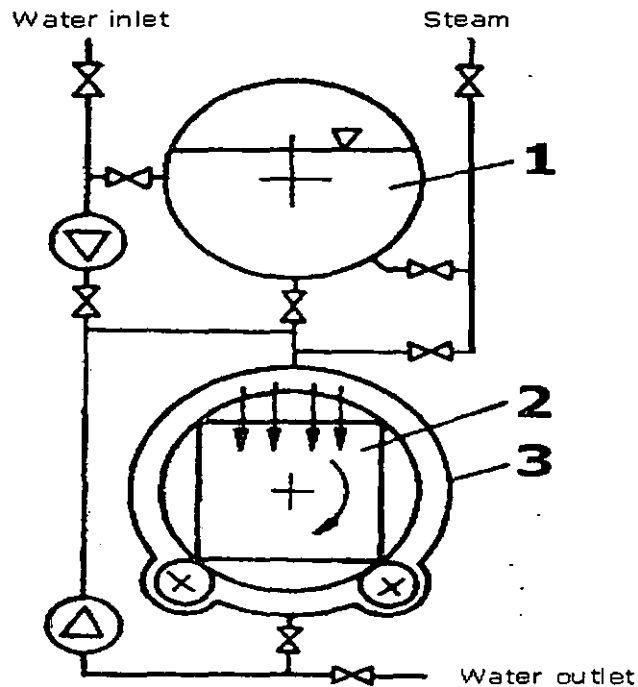
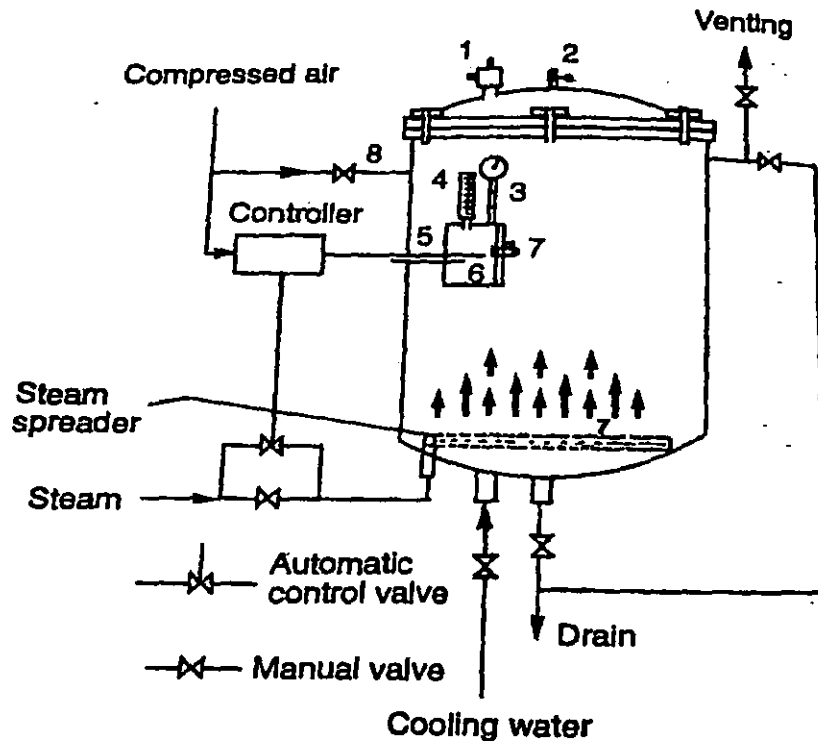


Figure 3



4.
 - a. The pre-slaughter, slaughter and post-slaughter operations can influence the quality of products derived from a beef processing plant. Discuss with specific examples.
 - b. What will you consider in designing facilities for these operations? Give reasons for your considerations.
5.
 - a. Regardless of whether one is operating on-line or off-line egg processing, what steps will you take to maintain egg quality on the farm?
 - b. Further processing of eggs transforms it into a convenient and useful forms. With three specific examples and the help of flow diagrams discuss the steps you will follow for the transformation.

6. What steps will you follow to build, upgrade, or expand a meat processing plant? Explain how you will use the chart below to optimize process flow in a meat plant.

RELATIONSHIP CHART

Plant (Company) _____ Project _____
 Chartered by _____ With _____
 Date _____ Sheet _____ of _____
 Reference _____

This block shows relation between "1" and "3"

Importance of relationship (top)

Reasons in code (below)

"Closeness" Rating

Value	CLOSURESS	No. of Relationships
A	Absolutely Necessary	
E	Especially Important	
I	Important	
O	Ordinary Closeness OK	
U	Unimportant	
X	Not Considerable	
Total = $\frac{N \times (N-1)}{2}$		

Reasons behind the "Closeness" Value

Code	REASON
1	
2	
3	
4	
5	
6	
7	
8	
9	

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- 7.
- What are the basic steps in ice cream manufacture? Discuss in detail and delineate the contributions of the operations to the delivery of a good product.
 - Explain the following systems applied in poultry processing.
 - Automatic Loading System
 - Automatic Carcass Opening Machine