



FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
SCHOOL	AGRICULTURE AND FISHERIES SCIENCES		
DEPARTMENT	FOOD SCIENCE AND SYSTEMS		
SUBJECT	APPLIED FOOD ENGINEERING		
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DURATION	2 HOURS	MARKS	100

SECOND OPPORTUNITY EXAMINATION

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This question paper consists of **one (1)** page, excluding this front page.

Instructions

- Answer all **five (5)** questions

QUESTION 1

- a) Briefly describe the properties of hygienic materials used in a food processing plant. [10]
- b) Outline the general characteristics that should be looked at when selecting processing equipment. [10]

QUESTION 2

- a) Describe the operational arrangement of a $\frac{6 \times 3}{4 \times 2}$ heat exchanger. [4]
- b) Discuss four (4) variables of importance in the design or selection of plate heat exchangers. [8]
- c) Microwave heating is to be used to heat a product. It is desired to increase the rate of heating. Describe any four (4) product-related considerations that can be used to increase this rate. [8]

QUESTION 3

- a) Research and development in ohmic heating has led to its use in several food processing applications. Briefly outline any five (5) such applications. [10]
- b) The targeted accumulated F_0 value for a newly developed fish product is 8. Describe how you would determine the sterilisation process to be used in production at a plant. [10]

QUESTION 4

- a) Adequate cold air circulation is important in cold storage. Provide the reason for this and describe how this is normally achieved. [10]
- b) Discuss Total Dissolved Solids and its control in the boiler water. [10]
- c) Compressed air is to be used in a plant to remove peels from the fruit flesh surface in a peeling operation. Describe three (3) auxiliary equipment you would ensure are included in your compressor system. [6]

QUESTION 5

- a) Outline three (3) things that need to be done before engaging a company to install a suitable food processing control system at a plant. [6]
- b) Describe the considerations for selecting and installing a sensor in a typical food processing plant. [8]

END OF EXAMINATION