

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR  
OF SCIENCE IN FOOD SCIENCE & TECHNOLOGY

FOST 233: FOOD PROCESSING INSTRUMENTATION

STREAMS: FOST Y4S1

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

2.30 P.M - 4.30 P.M.

---

**INSTRUCTIONS:**

- Answer ALL Questions in Section A and any TWO Questions in Section B

**SECTION A: [30 MARKS]**

**QUESTION ONE**

Explain the following terms as commonly used in the course;

- (b) Precision and accuracy [2 Marks]
- (c) Reliability and reproducibility [2 Marks]
- (d) Molecular flow and viscous flow [2 Marks]

**QUESTION TWO**

- (a) Briefly explain how vacuum can be created when designing a freeze dryer. [3 Marks]
- (b) Water vapor can be used in creating a vacuum. Justify this statement. [3 Marks]

**QUESTION THREE**

- (a) Briefly describe how temperatures are measured and how can they be maintained to ensure efficient production continuity. [4 Marks]
- (b) Explain the importance of boilers and how their temperature can be controlled to ensure efficient production of steam. [3 Marks]

**QUESTION FOUR**

- (a) Briefly explain the relevance of flow meter and how it can facilitate accurate results during packaging of soda. [3 Marks]
- (b) Programmed operation system is much preferred to manual system in equipment installation. Justify this statement. [4 Marks]
- (c) What are transducers? Explain the roles they play in the field of instrumentation. [4 Marks]

**SECTION B: [40 MARKS] ANSWER ANY TWO QUESTIONS.**

**QUESTION FIVE**

- (a) Discuss different methods that can be applied during heating and cooling of products. [8 Marks]
  
- a) Briefly describe the operation of an automated system in the dairy plant, highlighting the roles of each part. [12 Marks]

**QUESTION SIX**

- (a) Discuss the factors to consider when selecting equipment to be installed in a given food processing plant. [15 Marks]
  
- (b) Describe various ways of developing pressure in food industries and suggest its possible applications. [5 Marks]

**QUESTION SEVEN**

Discuss different types of transducers, characteristics and their application in food industries. [12 Marks]

Explain various ways in which liquid level milk can be measured and controlled in a pasteurizer. [8 Marks]

.....