



KERALA AGRICULTURAL UNIVERSITY
B. Tech.(Food Technology) 2023 & Previous Admission
VI Semester Final Examination – June 2026

Beas 3212

Instrumentation and Process Control in Food Industry (2+1)

Marks: 50
Time: 2 hours

- I Fill in the blanks (10x1=10)**
1. is the degree of repeatability or reproducibility of a measurement.
 2. is the property of flowing fluids and it quantifies the resistance to flow set-up within the fluid.
 3. A characteristic of some instruments that exhibit different outputs for the same input or process variable, depending on whether the input is increasing or decreasing is called
 4. Thermocouples are temperature sensors that work based on the principle of
 5. is a measure of the relative clarity or cloudiness of a liquid due to the presence of suspended particles.
 6. is a measurement of the sugar content or soluble solids concentration in a liquid solution, commonly used in the food and beverage industry.
 7. of a system is the range of frequencies for which its dynamic sensitivity is satisfactory.
 8. The viscosity of liquid as temperature increases.
- State True or False**
9. Transducers are devices or systems that convert one form of energy or information into another form.
- Answer the following**
10. Mention any two Static Characteristics of an instrument.
- II Write short notes on ANY FIVE of the following (5x2=10)**
1. Distinguish between the 'static' and 'dynamic' characteristics of a measuring system and state the relevance of each in a measuring process.
 2. Write Short Notes on Pyrometers.
 3. What is meant by Thermal Wells?
 4. Explain the principle of conveyor scale.
 5. What are Self-generating transducers? Give two examples.
 6. Given temperature of 144.5° C, express this temperature in (a) K and (b) °F
 7. Classify Transducers based on Transduction Method.
- III Answer ANY FIVE of the following (5x4=20)**
1. Explain two-position controller with neat circuit diagram.
 2. What is meant by Manometers? Explain any one type of manometer with neat diagram.
 3. Discuss about Hydrometer system for density measurement with neat diagram.
 4. Briefly Discuss about Flow ratio control. Mention its advantages and Disadvantages.
 5. Describe the characteristics of intelligent controllers.
 6. Explain how computer-based monitoring and control are applied in food processing.
 7. Explain how moisture content in grain, tobacco, wood and granulated powder can be measured by means of a capacitive transducer.

IV Write an essay on ANY ONE of the following

(1x10=10)

1. Plot the Bode diagram for the following transfer function and obtain the gain and phase cross over frequencies.

$$G(s) = \frac{10}{s(1 + 0.4s)(1 + 0.1s)}$$

2. Explain any two methods of viscosity measurement with relevant diagrams.
