



**KERALA AGRICULTURAL UNIVERSITY**  
**B. Tech. (Agri. Engg.) 2024 Admission**  
**III Semester Final Examination – January 2026**

PFE 2101

**Engineering Properties of Agricultural Produce and Food Science (2+1)**

**Marks: 50**  
**Time: 2 hours**

**I**

**Fill in the blanks**

**(10x1=10)**

1. Rheology is the study of .....
2. The ideal elastic behavior is represented by.....
3. Roundness is a measure of .....
4. The angle of repose of a commodity ..... with increase in moisture.
5. Carbohydrates contain the elements.....

**State True or False**

6. For laminar flow, Reynolds number is less than 2100.
7. Unit of kinematic viscosity is  $m^2/sec$ .
8. Bacteria are generally the fastest growing microorganisms.
9. Dilatant fluids are also called as shear thinning fluids.
10. Hyper spectral imaging is commonly used in agriculture for monitoring crop health, moisture content, and nutrient deficiencies

**II**

**Write short notes on ANY FIVE of the following**

**(5x2=10)**

1. Explain the thermal properties of agricultural produce.
2. Differentiate between Newtonian and Non-Newtonian fluids.
3. Explain the rheological models used to describe the agricultural produce.
4. Explain the different agents of food spoilage.
5. Explain thermal conductivity and thermal diffusivity.
6. Explain the role of Hyper spectral imaging technique in agricultural produce.
7. Explain dielectric loss factor, loss tangent and dielectric constant.

**III**

**Answer ANY FIVE of the following**

**(5x4=20)**

1. What is meant by Non-Destructive methods of quality determination of foods?
2. Explain the electrical properties required to know in the processing of agricultural produce.
3. Explain why machine vision is required in processing of agricultural produce.
4. Explain the textural profile analysis of food.
5. In, CIELAB, what do  $L^*$ ,  $a^*$ , and  $b^*$  represent?
6. Explain the fluid behavior model.
7. Which types of produce generate the most heat?

**IV**

**Write an essay on ANY ONE of the following**

**(1x10=10)**

1. Explain the various engineering properties and their importance with example.
2. Explain the methods of food preservation. Also explain the destructive and non-destructive methods of quality determination of foods.

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