

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agrl.Engg.) 2016 Admission
1st Semester Final Examination-March-2017

Cat. No: Fape.1101.

Title: Engineering Properties of Agricultural Produce (1+1)

Marks: 50.00

Time: 2 hours

I Fill up the blanks

(10x1=10)

1. S.I Unit of density is-----
A. kg/m^2 B. kg/cm^3 C. kg/m^3 D. kg/cm^2
2. Pycnometer is used to measure -----
A. Porosity B. Density C. Viscosity D. Velocity
3. Identify the Newtonian Food?
A. Tea B. Coffee C. Beer D. All the above
4. Shear-thinning foods are also known as -----
A. Pseudoplastic B. Dilatant C. Thixotropic D. None of the above
5. Dilatant foods are also known as-----
A. Shear-thickening B. Shear-thinning C. Thixotropic D. None of the above
6. Unit of Sphericity is -----
A. m^3 B. m^2 C. m D. No units
7. -----is a measure of the sharpness of the corners of the solid.
A. Sphericity B. Roundness C. Volume D. Surface area
8. The fluids which shows a decrease in shear stress with time of shear at a given shear rate is known as -----
A. Thixotropic fluid B. Newtonian fluid C. Rheopectic fluid D. Power law fluids
9. Rheology is the science that studies the -----of materials.
A. Deformation B. Flow C. Deformation & Flow D. None of the above
10. The unit of dynamic viscosity is -----in the SI system.
A. Pa.h B. Pa.s C. Pa.s^2 D. None of the above

II Write short notes/answers on any FIVE of the following

(5x2=10)

1. Write the methods used for determination of volume.
2. What is specific gravity? Name the methods used for measuring specific gravity?
3. What is porosity? What is the relation connecting porosity and true density?
4. What is angle of internal friction? How it is different from angle of external friction?
5. Distinguish between oblique and oblong.
6. Distinguish between roundness and roundness ratio.
7. Distinguish between dynamic and kinematic viscosity.

III Write short answers on any FIVE

(5x4=20)

1. What are aerodynamic properties?
2. Define angle of repose? How static angle of repose is different from kinetic angle of repose?
3. Write the significance of physical properties of food.
4. Distinguish between Newtonian and Non-Newtonian fluids.
5. Briefly explain the importance of thermal properties of food materials. How thermal conductivity is different from thermal diffusivity?
6. Define granular materials and explain in detail about the flow characteristics of bulk materials.
7. Derive an expression for Kelvin model with necessary sketch.

IV Write essay on any ONE

(1x10=10)

1. Define rheological models. List out the rheological models. Derive Maxwell model and generalized Maxwell model for understanding rheological characteristics of biological materials.
2. Explain the application of engineering properties in design of handling/conveying machinery.
