KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Agrl. Engg.) 2019 Admission
I Semester Final Examination- January 2020

Fape.1101　　　Engineering Properties of Agricultural Produce (1+1)　　　Marks:50

Time: 2 hours

I　　**Fill in the blanks with the most appropriate choice**　　(10x1=10)

1. Unit of Sphericity is _____
   A. m^3　　　　B. m^2　　　　　　C. m　　　　　　D. No unit

2. _____ is a measure of the sharpness of the corners of the solid.
   A. Sphericity　　B. Roundness　　　C. Volume　　　D. Surface area

3. m^2/s is the SI unit of _____
   A. Dynamic viscosity　　　　　　B. Kinematic viscosity
   C. Apparent viscosity　　　　　　D. All the above

4. Viscous fluids can be categorized as _____.
   A. Bingham or Non-Bingham fluids　　B. Newtonian or Non-Newtonian fluids
   C. Both A and B　　　　　　　　　D. None of the above

5. Elastic bodies are classified as _____.
   A. Hookean or Non-Hookean　　　B. Viscoelastic or Viscoplastic
   C. Both A and B　　　　　　　　D. None of the above

6. The unit of dynamic viscosity is _____.
   A. Pa.h　　　　B. Pa.s　　　　C. $Pa.s^2$　　　D. None of the above

7. Toothpaste is an example of _____.
   A. Non-Bingham Plastic Fluids　　B. Bingham plastic fluids
   C. Both A and B　　　　　　　　D. None of the above

8. An example for Thixotropic fluid
   A. Gelatin　　　B. Egg white　　　C. Raw egg　　　D. Both A and B

9. Steel is an example for _____.
   A. Plastic body　　B. Maxwell model　　C.Hookean body　　D. Bingham body

10. Ratio of strain to stress is known as _____.
    A. Modulus　　　B. Poisson's ratio　　C. Pressure　　　D. Compliance

II　　**Write Short notes on ANY FIVE of the following**　　(5x2=10)

1. List the uses of physical properties in food processing operations.
2. Distinguish between Rheopectic and Thixotropic fluids.
3. Distinguish between sphericity and roundness.
4. Briefly explain methods used for surface area measurement.
5. What are hydrodynamic properties?
6. Explain Hookean and St.Venant bodies.
7. Write short notes on the importance of engineering properties of agricultural materials

III   **Answer ANY FIVE of the following**   **(5x4=20)**

1. Describe four element Burger's model.
2. Explain the methods of measuring the property angle of repose with neat sketch.
3. What is Rheology? Distinguish between stress, relaxation and creep.
4. Derive the expression for the drag co-efficient using dimensional modeling.
5. Briefly explain importance of frictional properties. How internal friction is different from external friction?
6. Explain generalized Maxwell model using suitable diagram.
7. Summarize the thermal properties of foods involved in heating or cooling of grains.

IV   **Write an essay on ANY ONE of the following**   **(1x10=10)**

1. Explain the application of engineering properties in storage structures
2. Define Rheological models. List out the Rheological models. Derive Kelvin model and generalized Kelvin model for understanding Rheological characteristics of biological materials

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