75 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2068 Chaitra

Exam.	Regular		
Level	BE	Full Marks	40
Programme	B. Agri.	Pass Marks	16
Year / Part	III / I	Time	1½ hrs.

Subject: - Engineering Properties of Biomaterials *(AE 602)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt any **Four** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Define the terms Hue and Gloss. Why is the knowledge of various engineering properties of biomaterials important for an agriculture engineer? Explain. [2+3]
   b) Define the term permittivity. Calculate the sphericity of a cylindrical object of diameter 1.5cm and height of 2.5cm. [1+4]
2. a) What do you mean by TQC? Explain. What are the methods of measurement of Bulk density of porous materials? Explain any one method. [2+3]
   b) Define the term thermal diffusivity. It is proposed that an air stream be used to seperate wheat kernels having terminal velocity of 9.7m/s from Oat kernels having terminal velocity of 8.3m/s. What air velocity would you choose? What factors would affect the degree of separation achieved? [1+4]
3. a) What do you mean by sensory quality control? Explain. Calculate the specific heat of potatoes having moisture content of 85%, the specific heat of bone dry materials and water being 837.36J/kgK and 4186.80J/kgK respectively. [2+3]
   b) Define the term 'stress relaxation' in Food Rheology. Explain the process of electrical heating of food materials. [2+3]
4. a) Define Sphericity. What are the methods of measuring angle of repose? Explain the effect of moisture context in angle of repose. [1+2+2]
   b) What do you mean by HACCP? Explain the principles of HACCP. Write down the application of optical properties of biomaterials. [1+2+2]
5. Write short notes on: [2.5×4]
   a) Codex Alimentarius Commission
   b) Dilatant and Pseudo plastic foods
   c) Heat of Respiration
   d) Surface area measurement of prolate and oblate spheroid

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