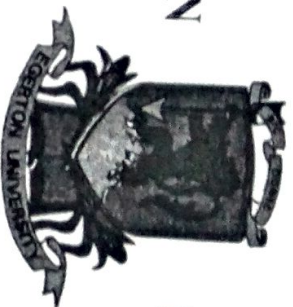


EGERTON



UNIVERSITY

NJORO CAMPUS

AGEN 543: PROPERTIES OF AGRICULTURAL MATERIALS

CAT 1

TIME: 1 HOUR

INSTRUCTIONS:

- (i) Attempt all the questions.
- (ii) Marks for each question are shown in the parenthesis ().
- (iii) Electronic calculators may be used.
- (iv) **DO NOT WRITE ON THE QUESTION PAPER.**

1. What is the essence of the following properties in scientific and industrial applications?
 - (i) Size (1 mark)
 - (ii) Shape (1 mark)
 - (iii) Angle of repose (1 mark)
 - (iv) Porosity (1 mark)
2. Briefly describe experimental gas displacement method used to determine the volume of solid agricultural materials. (1 mark)
3. Distinguish the following terms: (6 marks)
 - (i) Strain energy density and resilience. (2 marks)
 - (ii) Shear thinning fluid and shear thickening fluid. (2 marks)
 - (iii) Bingham and Non-Bingham plastic fluids. (2 marks)
4. Briefly describe the elastic and viscous models. (2 marks)
5. In an industrial process, 2000 kg of rice at 21% moisture is dried to 13% moisture before milling. Determine the: (4 marks)
 - (i) final weight of the rice (3 marks)
 - (ii) amount of water that must be evaporated during the drying process (2 marks)
