



UNIVERSITY OF GHANA
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BSC. SECOND SEMESTER EXAMINATIONS: 2014/2015

FPEN 314: RHEOLOGICAL AND SENSORY PROPERTIES OF FOODS (2 Credits)

INSTRUCTIONS: ANSWER TWO QUESTIONS FROM EACH SECTION

TIME ALLOWED: TWO (2) HOURS

SECTION A

1.
 - a. Explain the term “viscosity”
 - b. Given the power law equation: $\tau = K(dv/dz)^n$
 - i. Explain all the terms in the equation.
 - ii. Using the equation, and with examples where appropriate, distinguish between Newtonian and non-Newtonian fluids.
 - iii. Briefly comment on factors that influence the viscosity of a fluid.
2.
 - a. Explain the term “rheology”.
 - b. Kenkey is a semi-solid food that exhibits both viscous and elastic behavior simultaneously and is therefore described as a visco-elastic material. With the aid of an appropriate model (transient or dynamic), describe how the viscous and elastic components of kenkey can be determined.
3.
 - a. The textural analyses of foods involve fundamental, empirical and imitative tests. With specific examples, describe the applications of these tests in the textural analyses of foods.
 - b. Write brief comments on the applications of any two of the following:
 - i. Texture Analyzer
 - ii. Rotational viscometer (e.g. Brookfield)
 - iii. Brabender visco-Amylograph.

SECTION B

4.
 - a. Briefly comment on any five factors that should be considered during the planning phase for sensory evaluation of a food product.
 - b. Differentiate between
 - i. Duo-Trio and Triangle tests
 - ii. Acceptance and Preference testing
 - iii. Affective and Discriminatory testing

5.
 - a. The supplier for your key raw material has been changed due to quality related issues. In order to assess a possible impact of the new raw material on the product, your team has been tasked to conduct sensory evaluation. You have all the resources and facilities available to conduct any sensory evaluation test of your choice.
 - i. Select a method and justify your choice.
 - ii. Describe specifically how you would conduct the test.
 - b. How would you use the Hedonic scale in sensory evaluation?

6. The chocolate processing factory in which you are employed as a sensory scientist is developing a new premium chocolate product. As part of the product development team, write a report to summarize the process of obtaining a complete description of the key sensory attributes of this new product. Your report must include the details of the methodology and results of the sensory evaluation.