UNIVERSITY OF GHANA

BSC. ENGINEERING FIRST SEMESTER EXAMINATIONS: 2018/2019
DEPARTMENT OF FOOD PROCESS ENGINEERING

FPEN 405: ENGINEERING & DESIGN OF FOOD PROCESS III (PLANT PRODUCTS)
(3 Credits)

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS
TIME ALLOWED: TWO (2) HOURS

1.

a. Draw hypothetical grains for cereals and legumes and label all the components. Compare the two grains with particular reference to the implications of their basic composition in processing.

b. Discuss the application of cereals in the following products

i. Bread

ii. Alcoholic beverage

2.

a. With the aid of flow charts briefly describe the wheat milling process.

b. List and explain any four quality indices of wheat flour.

c. Distinguish between soft and hard wheat, and indicate their food applications.

3.

a. Explain the term "extrusion cooking".

b. Distinguish between single and twin-screw extruders.

c. Explain the following terms as used in extrusion cooking:

i. Compression ratio

ii. Specific mechanical energy input

iii. Co-rotating, fully intermeshing and self-wiping screws

iv. Expansion ratio of extrudates

4.

a. With specific examples, distinguish between climacteric and non-climacteric fruits.

b. Discuss the storage options for fruits in each of the two classes described above (a).

c. Explain the role of enzymes in fruit juice processing.

5.

a. Briefly discuss the quality implications for the following processes on fruits and vegetables:

i. Conventional hot air drying

ii. Quick freezing

iii. Slow freezing

b. Write brief comments on "3rd generation snacks".

c. Write brief comments on the functionality of spices and herbs in food systems.