

CARMEL COLLEGE OF ARTS, SCIENCE AND COMMERCE, NUVEM – GOA

POST GRADUATE DEGREE STUDIES (AFFILIATED TO GOA UNIVERSITY)

M.Sc. (II) Food Technology (Semester IV) Examination July 2021

FTO 118 LAB IN SNACK TECHNOLOGY

Max. Marks: 15

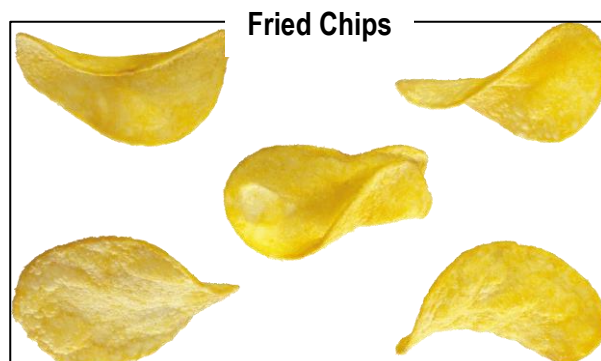
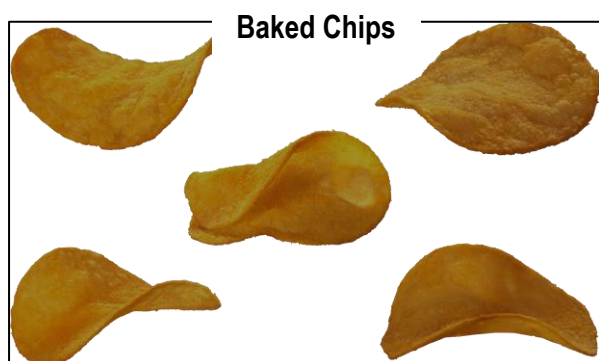
Duration: 2 hours

Date: 13th July 2021

INSTRUCTIONS:

1. All questions are compulsory.
2. Figures on the right indicate maximum marks assigned to the question

Q1. Effect of cooking methods (baking and deep-frying) on colorimetric properties of thinly sliced potato was evaluated at temperature of 180°C. The following results were obtained: (3 marks)



T= 180°C	Baked	Fried
L^*	75.3	87.9
a^*	20.0	-2.1
b^*	55.4	64.9

- a. Note down your conclusion.
- b. Explain the reasons for difference in colorimetric properties.

Q2. A study was conducted to assess the effect of thickness and frying temperature on final quality and sensory properties of the product. A variety of Kerala Banana was selected to be processed into banana chips, a popular snack. The fruit was peeled, washed and cut into slices of thickness 1.0 mm, 2.0 mm and 3.0 mm, marinated with salt and turmeric and fried at 180°C. The following chart of sensory attributes was recorded: (4 marks)

- a. Based on the data provided, draw up your conclusions.
- b. What is the overall effect of thickness on product quality?
- c. Scientifically explain the reason for the above.

T= 180°C	1.0 mm	2.0 mm	3.0 mm
Slice Thickness	8.53 ± 0.99	8.32 ± 0.93	6.55 ± 0.69
Color	8.2 ± 0.64	8.6 ± 0.35	7.8 ± 0.57
Flavor (Sweetness)	5.64 ± 0.03	6.49 ± 0.23	6.89 ± 0.86
Texture	8.93 ± 0.04	8.21 ± 0.09	7.55 ± 0.87
Overall acceptability	9.22 ± 0.42	8.53 ± 0.33	7.84 ± 0.01

- Q3. Murukku (Chakli) is a widely consumed deep-fat fried Indian snack. In an attempt to develop variations of murukku, the original composition composing of rice flour and Urad flour was modified to Recipe A, B, and C. Cooking temperature (190°C) and time (3 min) were maintained across all variations. (4 marks)**

Recipe A	Recipe B	Recipe C
Refined Wheat Flour + Water + Salt + Red Chili Powder + Asafetida + Cumin	Soybean Flour + Water + Salt + Red Chili Powder + Asafetida + Cumin	Gram Flour (Besan) + Water + Salt + Red Chili Powder + Asafetida + Cumin

The observations were recorded as follows:

- The outer surface of Murukku prepared using Recipe B had more surface irregularities (voids, holes and cracks), compared to Recipe C. Recipe A had least amount of surface irregularities.
- Snack produced from Recipe A has highest amount of absorbed oil (28%), followed by those from Recipe B (10%) and C (5%).
- Dark Color of the Murukku was observed in the following order: Recipe A < Recipe C < Recipe B.

Justify the cause of these observations.

- Q4. Chikki or Peanut Brittle (PB) is an Indian snack popular for its sweetness, snap and crunch and is commonly made out of peanuts and jaggery. Flaxseed is a rich source of Omega-3 fatty acids, and is a suitable fortificant for vegetarians and vegans, unlike fish oil. Flaxseed-enriched (20%) peanut brittle (FPB) was developed as a product rich in protein and essential fatty acids. Incorporation of antioxidant (A) was also evaluated. (4 marks)**

T= 180°C	PB (Control)	FPB	FPB + A
Protein Content (%)	14.8	13.0	12.8
Omega-3 content (%)	0.3	9.1	9.0
Moisture Content (%)	4.6	4.5	4.8
Peroxide Value	4.48	11.98	5.06
Color (L*)	59.4 ± 0.04	49.1 ± 0.21	45.4 ± 0.08
Texture (Snap) (N)	62.1	61.5	61.9
Taste (Sensory Evaluation)	9.12 ± 0.01	8.98 ± 0.03	8.83 ± 0.1

- Comment on the nutritional contribution of flaxseed to the Brittle.
- How has flaxseed affected product stability and acceptability?