

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – FOOD CHEMISTRY AND FOOD PROCESSING

SECOND SEMESTER – APRIL 2022

PFP 2503 – RES. METHODOLOGY AND BIOSTATISTICS

Date: 20-06-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

(10x 3 = 30 Marks)

Q. No

Answer ALL Questions

- 1 Recognize and justify the type of research
“Drying characteristic of red banana in a direct solar dryer based on natural and forced convection”
- 2 Why are experiments conducted in triplicate?
- 3 Compare and contrast control and placebo.
- 4 What are the sources of secondary data?
- 5 Differentiate quartile, decile and percentile.
- 6 Imagine a study was conducted to ascertain the significant relationship between “Moisture sorption isotherm and shelf life of complementary food based on amaranth–sorghum grains” which statistical test would be used and why?
- 7 Draw one-way ANOVA classification table.
- 8 Write an example of a null hypothesis.
- 9 How is footer different from a footnote?
- 10 Draw a spider chart for the evaluation of sensory properties of a food sample.

PART – B

(5 x 8 = 40 Marks)

Answer ALL the Questions

- 11 a. Discuss the steps involved in formulating a research problem. How does secondary data collection be used in problem solving?
(OR)
b. Illustrate and explain sampling design.
- 12 a. Prepare any four measurement scales for the following topic
“Sensory properties, and antioxidant activity of oat and buckwheat-based cookies”
(OR)
b. Prepare a questionnaire for the following topic
“Assessing knowledge and use practices of plastic food packaging among young adults concerns about chemicals and health”
- 13 a. Find Mean, Median and Mode for the following data

X	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
F	12	16	10	14	15	11	8	7	9

(OR)
b. Find the correlation between base saturation percentage (X) of the soils and Brix of pineapple (Y)

X	30	40	50	40	70	40	30	15	75
Y	11	12	13	12	15	12	11	10	16

- 14 a. Relationship between high-fructose corn syrup (HFCS) concentration and contribution of HFCS to total energy intake and in turn body weight was evaluated in mice for a period of 21 weeks. The data on body weight (g) before and after the supplementation is presented. Can you prove that HFCS has a significant impact on obesity? (Table $t_{0.01}$: 2.364)

Before	18	20	22	19	21	24	26	20
After	20	21	23	20	22	25	26	21

(OR)

- b. A group of seven-week old rats reared on a high omega 3 diet weigh 13, 16, 17, 14, 13, 12, and 15 ounces; a second group of five rats, similarly treated except that they receive a low omega 3 diet, weigh 10, 12, 9, 10 and 11 ounces. Test at 5 per cent level whether there is significant evidence that additional protein has increased the weight of the rats ($t_{0.05} = 1.812$).
- 15 a. Bring out the various types of visual presentation in research using charts and tables.

(OR)

- b. Explain and diagrammatically represent informal designs of experimentation.

PART – C

(2 x 15 = 30 Marks)

Answer any TWO Questions

- 16 Arrange the research process using a flow chart and explain.
- 17 An experiment was conducted to test the efficacy of allicin in checking cholesterol. In a certain health centre, Allicin was given to 405 out of 625 people. The number of cases as follows. Test the results with the help of χ^2 at 5 percent significance (Table $\chi^2_{0.05} = 5.991$).

Disease Risk	Normal	High Cholesterol	Not checked	Total
Consume Allicin	35	250	120	405
No Allicin	50	40	130	220
Total	85	290	250	625

- 18 The viscosity of three edible film forming solutions is presented, Perform ANOVA (Table $F_{0.05} = 3.885$)

Pea Starch	Glycerol	Guar Gum
9	7	8
8	9	7
11	12	9
7	15	11
10	13	12

- 19 Explain the technique and importance of writing a research report.

@@@@@@@