

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

SECOND SEMESTER EXAMINATIONS – 2022

FOOD TECHNOLOGY - THIRD YEAR DEGREE

FT 324 SCIENCE COMMUNICATION &  
RESEARCH METHODOLOGY

TUESDAY 25<sup>TH</sup> OCTOBER-- 12:50 PM.

**TIME ALLOWED: 3 HOURS**

**INFORMATION FOR CANDIDATES:**

1. You have 10 minutes to read the paper. You must not begin writing in the answer book during this time.
2. **ANSWER ALL QUESTIONS**
3. All answers must be written in the answer books provided.
4. Write your name and number clearly on the front page. Do it now.
5. Calculators are permitted in the examination room. Notes and textbooks are not allowed.
6. Show all workings and calculations in the answer book.

**MARKING SCHEME**

QUESTION 1	[10½ MARKS]
QUESTION 2	[17 MARKS]
QUESTION 3	[17 MARKS]
QUESTION 4	[21 MARKS]
QUESTION 5	[20 MARKS]
QUESTION 6	[14½ MARKS]

## ANSWER ALL QUESTIONS

1. (a) Define research and science communication and explain their importance and or significance for a food scientist and food technologist. [3 marks]
- (b) When using human subjects as research participants in especially clinical settings, basic ethical principles of human dignity, beneficence and justice are very important. Explain these principles. [4½ marks]
- (c) Moral uprightness is one of the graduate attributes of a PNGUoT Food Technology graduate. Describe what this attribute is about and its significance for you as an individual and as a professional in your field. [3 marks]

(Total = 10½ marks)

2. (a) Define and describe the following research approaches; positivism and pragmatism approaches. [4 marks]
- (b) Explain the importance of understanding measurement principles in research. [2 marks]
- (c) Fully describe the ratio and interval scales of measurements giving relevant examples of each. [3 marks]
- (d) Explain the importance of sampling in research. [2 marks]
- (e) If the township of Lae is your population area, how would you do the sampling that is representative of the township? [3 marks]
- (f) Explain the relevance of standard deviation and the confidence interval if you were to calculate the sample size yourself. [3 marks]

(Total = 17 marks)

3. (a) Describe the scientific method of research. [4 marks]
- (b) State and describe the five C's of writing a literature review. [5 marks]
- (c) Describe how you can avoid plagiarism. [3 marks]
- (d) Problem statement and hypothesis are important part of a scientific research; describe what they are and their significance. [5 marks]

(Total = 17 marks)

4. (a) Tests can be used to collect data in research, although, what they actually measure is quite complex. State and describe one way in which you can validate a test. [2 marks]
- (b) Write short notes describing interviews as a data collection technique in research. Include in your discussion, what it involves, description of the types of interviews, advantages and disadvantages. [7 marks]
- (c) Write short notes describing questionnaire as a data collection technique. [6 marks]
- (d) Discuss the following when using observations to collect data; the roles of the observer and how to address the problems of validity and reliability. [6 marks]

(Total = 21 marks)

5. (a) Surveys are an important research method in some areas of science (e.g., nutritional studies). Discuss longitudinal survey method, including the descriptions of the three types of longitudinal surveys. [7 marks]
- (b) Discuss what case study method of research involves, the main types and the main steps involved when using this method of research. [7 marks]
- (c) Experimental method of research is the method that is familiar to you as a science student. Explain what the purpose of the experimental research design is. [2 marks]
- (d) In an experimental research method, it is important to adequately demonstrate cause-and-effect and this requires four types of findings about the independent and the dependent variable. Fully state these findings. [4 marks]

(Total = 20 marks)

6. (a) In line with controlling variables within an experiment, in modern clinical studies the following are referred to as 'gold standard'; random assignment to groups, double blind and use of placebos. Discuss their significance. [4½ marks]
- (b) Explain the significance of the use of inferential statistics in experimental method of research. [2½ marks]
- (c) Choose either quasi-experimental design or correlation studies and describe what they are. [2½ marks]

- (d) In quantitative research, measurements and variables are very important. Explain the following variables; independent, dependent and intervening variables. [3 marks]
- (e) Quality of research is judged by the quality of the final written report. Explain. [2 marks]

(Total = 14½ marks)