



UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
THIRD YEAR FIRST SEMESTER EXAMINATION IN BSc Hons (MLS)- 2021
MLSRM 3113 RESEARCH METHODOLOGY AND MEDICAL STATISTICS

Date: 09.06.2022

Time: 3 hours

Answer all Four Questions. Marks allotted to each part are given in brackets.

Answer Part A, B, C and Part D in separate answer books.

Part A

1. A researcher planned a research study titled "Health-Related Quality-of-Life and Associated Factors among Medical Laboratory Technicians at the Teaching Hospital Jaffna." The hospital had 800 male and 400 female medical laboratory technicians (Hypothetical population). The researcher planned to measure the health-related quality of life on a scale of 0 to 100 using a standardized tool. The study aimed to assess the association between health-related quality of life and the following factors: age (measured in years), gender (male, female), marital status (single, married, divorced), educational level (Diploma or Degree), years of experience (measured in years), income (measured in rupees), working hours (measured in hours per day) and the presence of chronic illness (yes or no). The calculated sample size for the study was 400.

- 1.1. Name the study design used in this study (10 Marks)
- 1.2. Mention the general objective of this study (10 Marks)
- 1.3. List the specific objectives of the study (10 Marks)
- 1.4. Describe a possible sampling technique which could be used for this study (25 Marks)
- 1.5. List three (03) categorical and three (03) continuous variables, along with explanations. (20 Marks)
- 1.6. Outline a analysis plan for this research, including the appropriate statistical tests? (25 Marks)

Part B

2. Time taken for a pain killer drug to relieve pain of 50 cancer patients is given in the table below.

Time taken to relieve pain (min)	1 -10	11 - 20	21 - 30	31 - 40	41 - 50
Frequency	8	14	12	9	7

- 2.1. Find the following from the given data.

- 2.1.1. Mean (15 Marks)
- 2.1.2. Median (15 Marks)
- 2.1.3. Mode (15 Marks)
- 2.1.4. Standard deviation (15 Marks)

- 2.2. Assume that the mean systolic blood pressure of normal adults is 120 millimeters of mercury (mm Hg) and the standard deviation is 5.6. Assume the variable is normally distributed.

- 2.2.1. If an individual is selected, find the probability that the individual's pressure will be between 120 mm Hg and 121.8 mm Hg. (15 Marks)
- 2.2.2. If a sample of 30 adults is randomly selected, find the probability that the sample mean will be between 120 mm Hg and 121.8 mm Hg. (15 Marks)
- 2.2.3. Why is the answer to question 2.2.1 so much smaller than the answer to question 2.2.2? (10 Marks)

Part C

3.

- 3.1 Define the following terms.

- 3.1.1 p value (10 Marks)
- 3.1.2 Type I and Type II error (10 Marks)
- 3.1.3 ANOVA test (10 Marks)

- 3.2 You are requested to plan a research to find out the relationship between smoking and lung cancer

- 3.2.1 Write the null hypothesis and the alternate hypothesis (20 marks)
- 3.2.2 Outline how you are planning the analysis to test the hypothesis.
(Explain the steps, type of the test you will perform and the reason for the selection of that test) (30 Marks).
- 3.2.3 Draw a 2X2 table you are planning to use for the analysis (20 Marks)



Part D

4. A research report published in an authenticated peer-reviewed journal is given,
- 4.1 Name the Journal and its Publisher. (10 Marks)
 - 4.2 State the knowledge gap studied in the given research report? (15 marks)
 - 4.3 Briefly explain the term "peer-review" (15 marks)
 - 4.4 List five (5) exclusion criteria used for sample selections in this study. (15 marks)
 - 4.5 State the limitations of the given research study. (10 marks)
 - 4.6 Explain why the authors did receiver operating characteristics (ROC) analysis in this research. (15 marks)
 - 4.7 Describe the key findings in Table 2 in the given report. (20 marks)