

UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
Third Year First Semester Examination in BScHons(Nursing) – 2022/Proper 15th Batch

NURRM 3163 RESEARCH METHODOLOGY & MEDICAL STATISTICS

Date: 03.01.2024

Time: 3 hours

ANSWER ALL FOUR QUESTIONS

Write answers for Part A, B & C in Separate Booklets

Part A

1.

1.1. During January the numbers of people entering a medical store during the first hour after opening were as follows.

Time after opening, x minutes	Frequency	Cumulative frequency
$0 < x \leq 10$	210	210
$10 < x \leq 20$	134	344
$20 < x \leq 30$	78	422
$30 < x \leq 40$	72	a
$40 < x \leq 60$	b	540

- 1.1.1. Find the values of a and b. (10 Marks)
- 1.1.2. Draw a cumulative frequency graph to represent this information.
Take a scale of 2 cm for 10 minutes on the horizontal axis and 2 cm for 50 people on the vertical axis. (15 Marks)
- 1.1.3. Use your graph to estimate the median time that people entered the medical store after opening. (05 Marks)
- 1.1.4. Calculate estimates of the mean minutes (m), and standard deviation minutes (s), of the time that people entered the medical store after opening (15 Marks)
- 1.1.5. Use your graph to estimate the number of people entering the medical store between $(m - \frac{1}{2}s)$ and $(m + \frac{1}{2}s)$ minutes after opening. (15 Marks)

1.2. The average cholesterol content of a certain brand of eggs is 215 milligrams, and the standard deviation is 15 milligrams. Assume the variable is normally distributed.

1.2.1. If a single egg is selected, find the probability that the cholesterol content will be greater than 220 milligrams.

(15 Marks)

1.2.2. If a sample of 25 eggs is selected, find the probability that the mean of the sample will be larger than 220 milligrams.

(15 Marks)

1.2.3. Explain, why the probability for 1.2.1. is greater than that of 1.2.2.

(10 Marks)

Part B

2. A researcher conducted the study to find the quality of life of oesophageal cancer patients and the associated factors on it. The data collected from few participants are shown in the following table.

S. No.	Age (years)	Gender	Family income (SLR)	Stage of CA	Duration of disease	Overall QoL (0-100)	Level of QoL (0-50-Poor, 51-100- good)
1.	42	Male	45,000	I	15 months	70	Good
2.	45	Female	32,000	IV	18 months	35	Poor
3.	54	Male	40,000	II	20 months	65	Good
4.	35	Female	35,000	IV	16 months	40	Poor
5.	50	Male	40,000	III	14 months	48	Poor
6.	43	Male	60,000	II	12 months	70	Good
7.	60	Male	50,000	I	10 months	75	Good

2.1. Identify the type of variable for each of the variables mentioned in the above table

(20 Marks)

2.2. Mention the level of measurements used to describe the numerical data

(10 Marks)

2.3. Mention the descriptive statistics which can be used to describe the overall quality of life of the participants in this study.

(10 Marks)

2.4. State the statistical test to find the association between the following pair with reason. Assume that the data is normally distributed.

2.4.1. Overall quality of life and age of the participants

(15 Marks)

2.4.2. Overall quality of life and gender of the participants

(15 Marks)

2.4.3. Overall quality of life and the stage of Cancer

(15 Marks)

2.4.4. Level of quality of life and the gender

(15 Marks)

3. The researcher planned to assess the prevalence of migraine and associated factors among the elders who are resident at the government elder's homes in Northern Province by using the questionnaire. Assume that there are 9000 residents in all elders' homes.
 - 3.1. Write the general objective and specific objectives of this research (20 Marks)
 - 3.2. Define the study population of this study. (05 Marks)
 - 3.3. Write one inclusion criteria and one exclusion criteria for this study. (10 Marks)
 - 3.4. Calculate the sample size of this research by using Yamane formula

$$(n = \frac{N}{1 + N(e)^2})$$
 Level of precision is 0.05 (15 Marks)
 - 3.5. What type of questionnaire the researcher could use in this study with reason (15 Marks)
 - 3.6. Briefly describe the ethical principles need to be considered by the researcher while doing this research (20 Marks)
 - 3.7. Briefly describe the importance of pilot study (15 Marks)

Part C

4. A research team is planning a study to assess the perceived satisfaction of academic environment among the university students at the University X.
 - 4.1. In a recent similar study, the reported prevalence of perceived satisfaction was 46%, as documented in the BMC Public Health Journal in Volume 1, 2021 Article ID 21632. The paper title is "Perceived satisfaction of academic environment and its associated factors of university students", page number 21-23 and the authors were Nipuna Fernando, Nethmi Thilsara and Monica Christova.
 - 4.1.1. Name three (3) referencing styles suitable for citing this journal article (15 Marks)
 - 4.1.2. Provide a sample citation format, both in-text and in the reference list, for the above journal paper using one of the referencing styles mentioned in 4.1.1. (30 Marks)
 - 4.2. The University X comprises Faculties A, B, C, D, and E, with respective student population of 450, 570, 345, 420, and 510. The researchers have determined a sampling size of 420 for their study.
 - 4.2.1. List three (3) possible probability sampling methods applicable to this study. (15 Marks)
 - 4.2.2. Describe how the researchers can select a sample of 420 by using one of the methods mentioned in 4.2.1. (40 Marks)