UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
Third Year First Semester Examination in BScHons(Nursing) – 2023/Proper 16ᵗʰ Batch

NURRM 3163 RESEARCH METHODOLOGY & MEDICAL STATISTICS

Date: 03.12.2024   **Time: 3 hours**

ANSWER ALL FOUR QUESTIONS
Write answers for Part A, B & C in Separate Booklets

Part A

1.

   1.1.

      1.1.1. Give an example for each of the event.
         1.1.1.1.   Mutually exclusive events   (2.5 Marks)
         1.1.1.2.   Collectively exhaustive events   (2.5 Marks)

      1.1.2. In an experiment, it is given that $P(A) = 0.75$, $P(B) = 0.3$, $P(A|B) = 0.75$ and $P(A \cap B) = 0.225$. Justify your answers to the following questions numerically.
         1.1.2.1.   Are A and B independent?   (05 Marks)
         1.1.2.2.   Are A and B mutually exclusive?   (05 Marks)
         1.1.2.3.   What is $P(B|A)$?   (05 Marks)

   1.2. The number of children, under the age 10 years, receiving treatments from an eye clinic during 30 days was recorded as follows

3	5	4	5	5	2	3	2	5	7	2
5	3	2	7	6	8	3	2	6	5	5
7	8	3	6	5	5	3	4			

      1.2.1. Prepare an ungrouped frequency distribution of the above data.   (10 Marks)
      1.2.2. Find the mode, mean, median and standard deviation pertaining to the above data   (40 Marks)

   1.3. Suppose that we are told that the heights of adult males in a particular region of the world are normally distributed with a mean of 70 inches and standard deviation of 2 inches.
      1.3.1. Approximately what proportion of adult males are taller than 73 inches?   (10 Marks)
      1.3.2. What proportion of adult males are between 72 and 73 inches?   (10 Marks)
      1.3.3. What height corresponds to the point where 20% of all adult males are greater than this height?   (10 Marks)

Part B

2.

    2.1. Explain the differences between the following pairs of research designs, with examples:

        2.1.1. Qualitative vs. Quantitative   (25 Marks)

        2.1.2. Observational vs. Experimental   (25 Marks)

        2.1.3. Descriptive vs. Analytical   (25 Marks)

    2.2. Propose an appropriate research design with reasons to study the association between physical activity and sarcopenia among elderly individuals in a specific village.   (25 Marks)

Part C

3.

    3.1. Define the following terms:

        3.1.1. Study population   (05 Marks)

        3.1.2. Study duration   (05 Marks)

        3.1.3. Study setting   (05 Marks)

        3.1.4. Exclusion criteria   (05 Marks)

        3.1.5. Sampling frame   (05 Marks)

        3.1.6. Sample   (05 Marks)

    3.2. Briefly explain three (3) probability sampling techniques and provide appropriate study setting for each   (30 Marks)

    3.3. List four data collection methods used in quantitative research   (20 Marks)

    3.4. Describe how will you perform the content validity   (20 Marks)

4.

    4.1. Name the type of scales of measurement with one example variable for each (20 Marks)

    4.2. Write the properties of each type of scales of measurement which you mentioned in 4.1   (10 Marks)

    4.3. Write the statistical tests which can be used to find the mean difference between the groups   (20 Marks)

    4.4. A research study was conducted to assess the prevalence of anaema and associated factors. The following paragraph is the results of that study.

        "Mean haemoglobin was 12.31 ± 1.51g/dl and mean serum ferritin was 21.31ng/ml 95%CI 18.99-23.63 respectively. The prevalence of anaemia was 27.9% (n=324). Prevalence of anaemia was significantly higher in children aged 12-16yrs ($p<0.001$). $p<0.05$ was considered statistically significant."

        4.4.1. Write the null hypothesis and alternative hypothesis for the association of anaemia with age   (20 Marks)

        4.4.2. Write the interpretation of the following

            4.4.2.1. Mean haemoglobin was 12.31 ± 1.51g/dl   (10 Marks)

            4.4.2.2. mean serum ferritin was 21.31ng/ml 95%CI 18.99-23.63   (10 Marks)

            4.4.2.3. $p<0.05$ was considered statistically significant.   (10 Marks)