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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. in Health Promotion
First Year – Semester II Examination – January/February 2023

HPT 1213 – STATISTICAL METHODS FOR HEALTH RESEARCH

Time: Two (02) hours

Answer ALL questions.

1. a) List **four (04)** examples for nominal variables from a community data collection. **(20 Marks)**

   b) Explain whether the following variables are continuous or discrete. **(25 Marks)**

   i. Birth weight
   ii. Number of visits to a health center
   iii. Body temperature
   iv. Mid-arm circumference
   v. Number of home deliveries in a PHM area

   c) Discuss in brief the purpose of creating a histogram of a data set. **(25 Marks)**

   d) Explain giving reasons the most appropriate graph to present following data.

   i. The distribution of diabetes among people of different age groups from the North Central Province of Sri Lanka **(15 Marks)**

   ii. Number of children effected with malnutrition in Anuradhapura district from year 2016, 2017, 2018, 2019, 2020 & 2021 **(15 Marks)**

2. a) Answer following questions based on three data sets A, B and C.

   A = 9, 10, 11, 7, 13, 12, 11, 13, 12, 11.5, 12.5
   B = 10, 10, 10, 10, 10, 9, 9, 10, 10, 10.5, 10, 9, 9.5
   C = 6, 6, 16, 19, 18, 15, 14, 17, 15, 15, 16, 17, 16

   i. Identify the mode of each dataset. **(15 Marks)**

   ii. Calculate the mean and median of each dataset. **(30 Marks)**

   iii. Explain giving reasons whether mean or median is more appropriate to describe the distribution of each of the above data sets. **(30 Marks)**

b) The average daily payment for workers at a restaurant is Rs.580.50 with a standard deviation of Rs.35.00. Calculate the **maximum** and **minimum** daily payment of the middle 50% of workers, assuming that the payments are normally distributed.

(25 Marks)

3. a) Outline the conditions of using student t – test. **(20 Marks)**

b) Data was collected from a random sample of 20 female university students to study the distribution of BMI. The sample BMI has a mean of 22.4. The 95% confidence interval was calculated as 20.8 and 24.1 (95% CI 20.8 – 24.1).

i. Indicate the degree of freedom (*df*) for this test. **(05 Marks)**

ii. Interpret the calculated 95% Confidence Interval (95% CI 20.8 – 24.1) of the mean BMI. **(25 Marks)**

iii. Explain the changes of the interval when confidence level is increased from 95% to 99%. **(25 Marks)**

iv. Explain in brief what will happen to the 95% CI given in above (**b. ii**) if the sample size is increased from 20 to 40. **(25 Marks)**

4. a) Explain whether the groups selected in following studies are independent or dependent.

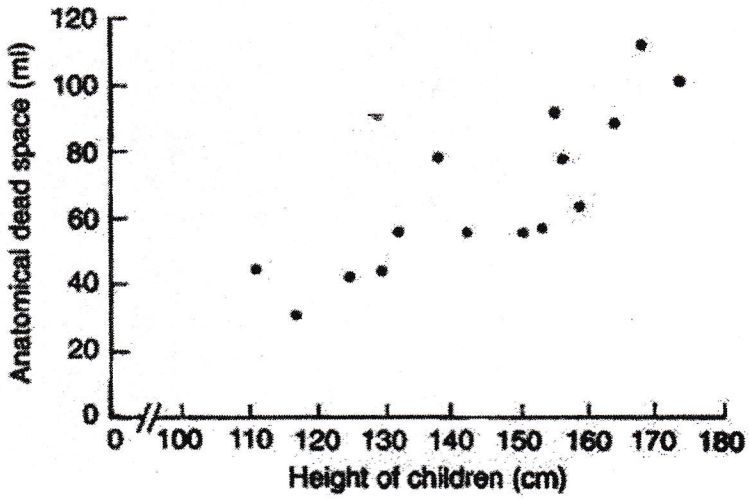
i. In a research to test the effectiveness of a health promotion intervention on birth weight, 80 pregnant women were randomly assigned to either the experimental (health promotion intervention) or control (no intervention) groups. The birth weight of newborns is measured and compared after the delivery. **(20 Marks)**

ii. In a research to investigate the effectiveness of a new health promotion intervention on the reduction of salt intake among elderly people in a community, details of daily salt intake of a group of elderly people was measured before delivering the intervention. Six months after the intervention, the daily salt intake was measured again of the same group. Data from both measurements were compared to see the effectiveness of the intervention. **(20 Marks)**

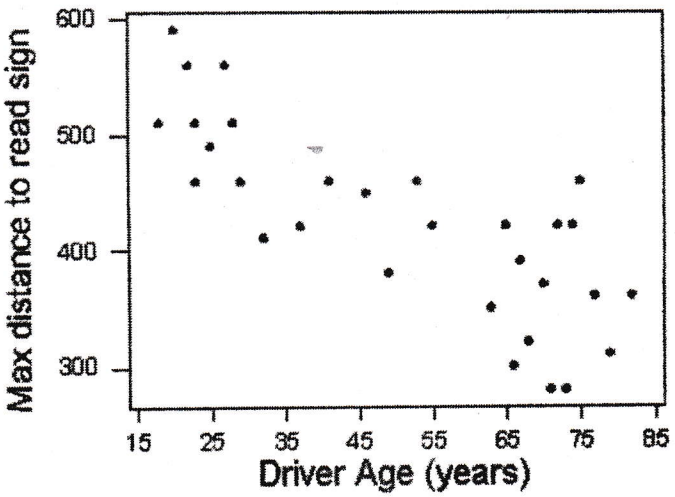
b). Outline the importance of scatter plot when investigating the relationship between two continuous random variables. **(15 Marks)**

c) Describe the level of relationship of the scatter plots given below.

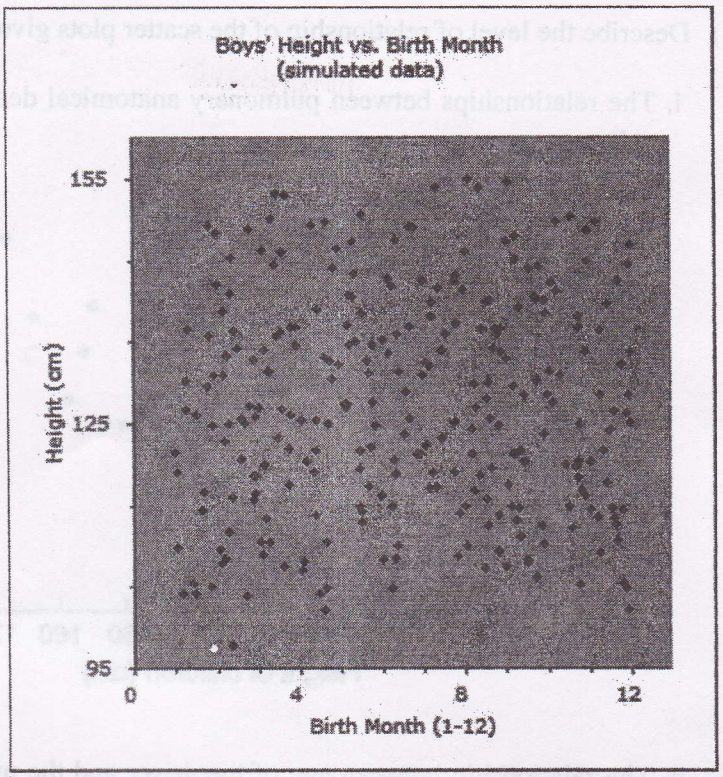
i. The relationships between pulmonary anatomical dead space (in ml) and height of children **(15 Marks)**



ii. The relationship between age of the driver and the maximum distance to read road traffic signs. **(15 Marks)**



iii. The relationship between the height of the boys and their birth month. **(15 Marks)**



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