Faculty of Medicine, University of Ruhuna
Third Examination for Medical Degrees (Part II) March 2022
Community Medicine Paper I
Thursday 24th March 2022

Answer all 05 questions   **(9.00 a.m. - 12.00 noon) 3 hours**
Answer each question in a separate book
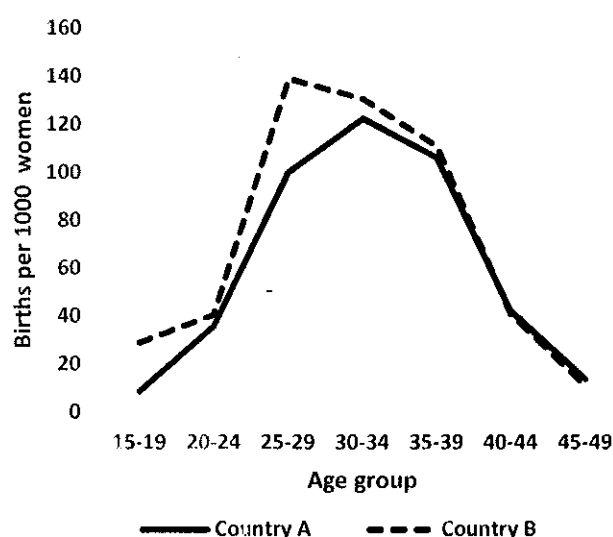
PART A

1.

1.1   List Two (02) uses of Statistics in medical sciences.   *(10 marks)*

1.2   List four (04) characteristics of the standard normal distribution.   *(10 marks)*

1.3   List two (02) probability and non-probability sampling methods.   *(10 marks)*

1.4   In a random sample of 100 school children, there were 25 obese, 10 overweight,

50 normal and 15 undernourished children, according to their Body Mass Index (BMI).

1.4.1   Construct a frequency table for the above 04 categories of BMI. Calculate

the relative frequencies as percentages and cumulative frequency %.   *(20 marks)*

1.4.2.   Find the standard error of the proportion of overweight children in this sample.   *(20 marks)*

1.5   The regression equation of level of cholesterol (mmol/L) and weight (kg) is given below.

Cholesterol = 1.2 + 0.06 (Weight)

1.5.1   Is the relationship between level of cholesterol and weight positive or negative? *(10 marks)*

1.5.2.   What is the average level of cholesterol of a person weighing 50 kg?   *(20 marks)*

PART B

2.

2.1

2.1.1   Define the following terms.

i.   Fecundity   *(05 marks)*

ii.   Fertility   *(05 marks)*

2.1.2 Following line graph shows the fertility trends of two countries. The corresponding age specific fertility rates of the two countries are given in the table.

Age group	Births per 1000 women	
	Country A	Country B
15-19	8.6	28.8
20-24	35.8	40.6
25-29	100.2	138.8
30-34	122.4	130.5
35-39	106	110.8
40-44	42	40.8
45-49	13.7	10.8

i. Comment on line graph with regards to the fertility trends of the two countries. *(15 marks)*

ii. Using the data given in the table **compare and interpret** the level of fertility of the two countries with appropriate calculations. *(25 marks)*

2.2

2.2.1 What is a "developmentally conducive environment"? *(05 marks)*

2.2.2 State the factors that are necessary to ensure a developmentally conducive environment for children at their homes. *(25 marks)*

2.2.3 List ten (10) activities that can be carried out by the parents for the developmental stimulation of infants of six months to one year of age. *(20 marks)*

PART C

3. A two-year-old boy with a history of recurrent infections was admitted to the paediatric ward with acute gastroenteritis. On examination, he was found to have growth faltering, with features of micronutrient deficiencies.

    3.1 How does the present illness of this child affect his nutritional status? *(15 marks)*

    3.2 What are the expected changes in nutritional requirements of this child due to the acute infection? *(40 marks)*

    3.3 What advice would you give the mother regarding the feeding of this child during the current episode of illness? *(40 marks)*

    3.4 State **three (03)** nutrition interventions carried out under Maternal & Child Health services that would help in improving the overall nutritional status of this child? *(15 marks)*

PART D

4.

4.1 Rapid, unplanned patterns of urban development lead to many emerging environmental health hazards.

    4.1.1. List five (05) environment health hazards related to rapid, unplanned urbanization. *(05 marks)*

    4.1.2 List five (05) **emerging** health challenges particularly evident in rapid, unplanned and unsustainable patterns of urban development. *(15 marks)*

    4.1.3 Briefly discuss the measures used to overcome the challenges stated in 4.1.2. *(30 marks)*

4.2

    4.2.1 Define occupational accidents. *(10 marks)*

    4.2.2 What are the three (03) main causes of occupational accidents? *(10 marks)*

    4.2.3 Briefly describe measures used to control occupational accidents among workers in a cement factory using the three-stage control model. *(30 marks)*

PART E

5. A study was conducted to evaluate the relationship between artificial sweeteners and bladder cancer. The researcher enrolled 3,000 patients with bladder cancer and 3,000 healthy people in the study. Among the patients, 1,200 had used artificial sweeteners in the past and among the healthy people, 800 had used sweeteners. Literature revealed that elderly males are more susceptible to develop bladder cancer.

5.1 What is the study design in this study? *(10 marks)*

5.2 Write the study hypothesis. *(10 marks)*

5.3 Calculate the appropriate measure of association. *(40 marks)*

5.4 State the possible confounders of the association tested in this study and how
they can be controlled. *(40 marks)*