



6Faculty of Medicine, University of Ruhuna  
Third Examination for Medical Degrees (Part II) December 2022  
Community Medicine Paper I  
Tuesday 13<sup>th</sup> December 2022

Answer all 05 questions

(9.00 a.m. - 12.00 noon) 3 hours

Answer each question in a separate book

Page 1

Part A

- 1.
- 1.1 In a sample of 100 patients, the average total cholesterol level was 220 mg/dL (SD=20 mg/dL) and the 25<sup>th</sup> and 75<sup>th</sup> percentiles were 200 mg/dL and 280 mg/dL, respectively.
- a. Calculate the inter quartile range. *(10 marks)*
  - b. Calculate the Standard Error of the mean cholesterol level. *(10 marks)*
  - c. Calculate 95% confidence interval (CI) of the mean cholesterol level. *(20 marks)*
- 1.2 A study was conducted to identify a possible association between age (categorized as aged 60-75 years and >75 years) and the use of the 3<sup>rd</sup> dose of COVID-19 vaccine in a sample of older adults in Galle. In a survey of 200 older adults aged between 60-75 years, 60% were immunized with the 3<sup>rd</sup> dose and in the sample of 200 older adults aged >75 years, 40% were immunized with the 3<sup>rd</sup> dose of COVID-19 vaccine.
- a. What is the most appropriate study design for this investigation? *(10 marks)*
  - b. State your null and alternative hypotheses. *(10 marks)*
  - c. What are the tests that you can use to test your null hypothesis? *(10 marks)*
  - d. Test your hypothesis at  $\alpha = 0.05$  level. *(30 marks)*

Part B

- 2.
- 2.1
- 2.1.1 Briefly describe the health issues related to international migration. *(20 marks)*
- 2.1.2 List **five (05)** existing strategies to improve the health of migrants. *(15 marks)*
- 2.1.3 Due to the recent economic crisis, there had been changes in the pattern of migration. In 2050 projected crude birth rate, crude death rate and net migration rate will be 10.7, 10.1 and -0.92 per thousand mid-year population respectively. Calculate the growth rate of Sri Lanka for the year 2050. *(15 marks)*

- 2.2
- 2.2.1 Define the term “still birth”. *(05 marks)*
- 2.2.2 List **five (05)** factors leading to still births. *(10 marks)*
- 2.2.3 Outline the measures adopted to prevent still births in Sri Lanka. *(35 marks)*

### Part C

3. A 40-year-old bank officer was diagnosed to have early stage colonic cancer. He was obese at the time of diagnosis and has reported spending long hours at work in his office and frequently consuming meals delivered from a leading fast food restaurant chain. His treatment plan included minimally invasive surgery, followed by chemotherapy.
- 3.1 State the mechanisms by which the dietary factors could have affected the development of cancer in this patient. *(30 marks)*
- 3.2 Briefly describe the effect of cancer on his nutritional status. *(30 marks)*
- 3.3 Outline the nutritional management of this patient including the management of side effects of treatment. *(40 marks)*

### Part D

- 4.
- 4.1
- 4.1.1 Briefly describe the occupational health problems among paddy farmers in Sri Lanka. *(30 Marks)*
- 4.1.2 Discuss the measures which can be adopted to prevent leptospirosis among paddy farmers in Sri Lanka. *(20 Marks)*
- 4.2 Globally, 93% of all children and 630 million children under 5 years are exposed to air pollution levels above the World Health Organization air quality guidelines. Each year, 570,000 deaths among children under 5 years occur due to air pollution worldwide.
- 4.2.1 List **four (04)** methods that can be used to assess air quality. *(10 marks)*
- 4.2.2 State **five (05)** reasons why children are more vulnerable for air pollution. *(10 marks)*
- 4.2.3 List **five (05)** effects of air pollution on children’s health. *(10 marks)*
- 4.2.4 Outline the measures that can be taken to minimize exposure to air pollution among children in Sri Lanka. *(20 marks)*

## Part E

5. A cross-sectional study was conducted to assess the accuracy of Pap smear in diagnosing cervical precancerous lesions. A sample of 2000 women was screened for cervical dysplasia by means of Pap smear, followed by cervical biopsy for confirmation. A total of 360 women were reported to have cervical dysplasia. The biopsy results were positive for 100 women and both the tests were positive for 60 women.
- 5.1 Draw the two by two table for above data. *(10 marks)*
- 5.2 Calculate the following. *(40 marks)*
- Sensitivity
  - Specificity
  - Positive predictive value
  - Negative predictive value
- 5.3 **Based on the above results**, comment on the suitability of pap smear for cervical cancer screening. *(30 marks)*
- 5.4 Human papilloma virus (HPV) vaccine has shown nearly a 90% reduction of cervical cancer in women. State the levels of prevention of cervical cancer achieved by
- HPV vaccination
  - Pap smear