Faculty of Medicine, University of Ruhuna

Third Examination for Medical Degrees (Part II) September 2020

Community Medicine Paper I

Wednesday 9th September 2020

Answer all 05 questions
Answer each question in a separate book

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

Part A

1. A researcher carried out a new vaccine trial during the recent COVID-19 pandemic to assess the effectiveness of the vaccine. The treatment group received the new vaccine and the control group received the placebo vaccine. Of 460 participants, 240 received the new vaccine.
    At the end of the pandemic, incidence of COVID-19 was assessed in two groups. Overall, 100 participants contracted COVID-19, of whom 20 were in the new vaccine group and 80 in the placebo group.

    1.1 State the null hypothesis used in assessing the effectiveness of the vaccine. *(10 marks)*

    1.2 What are the statistical tests that could be applied to test the above hypothesis? Give the reasons for your answer. *(30 marks)*

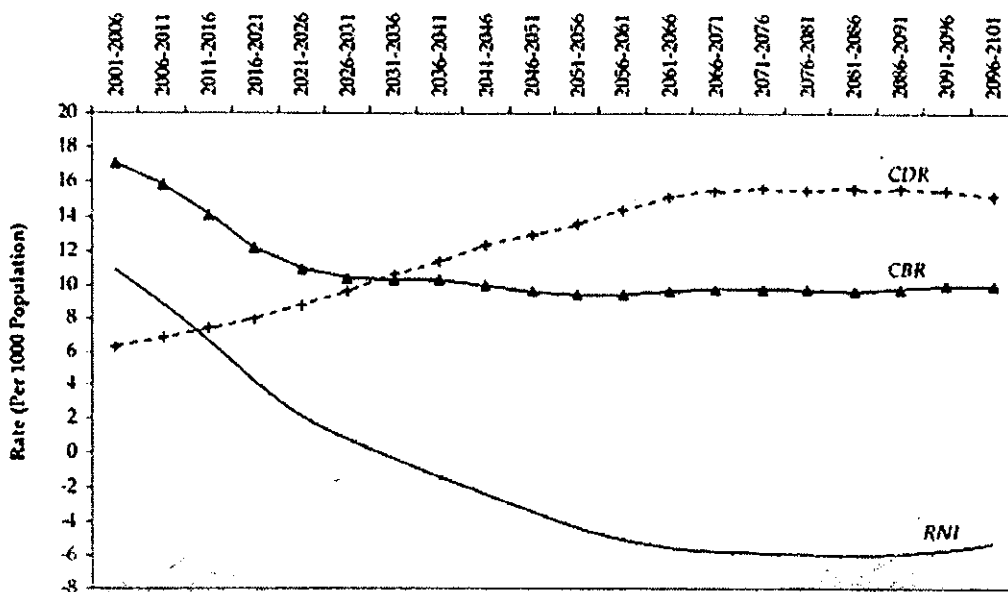   1.3 Test the hypothesis using one of the tests mentioned in 1.2. *(60 marks)*

Part B

2. 2.1 List the **five (5)** principal mechanisms underlying nutrition interventions. *(20 marks)*

    2.2 Briefly describe the nutrition interventions implemented to ensure food supply to households during the period of lockdown due to COVID-19 pandemic in Sri Lanka. *(50 marks)*

    2.3 Discuss the expected deficiencies of the interventions mentioned in 2.2. *(30 marks)*

3.

3.1 The following graph illustrates the projections for Crude Birth Rate (CBR), Crude Death Rate (CDR) and the Rate of Natural Increase (RNI) for Sri Lanka from 2001-2101.

3.1.1 Comment on the trend of the above indicators depicted in the graph. *(15 marks)*

3.1.2 Describe the possible reasons for the observations mentioned in 3.1.1. *(20 marks)*

3.2 The CBR and CDR for the year 2019 in Sri Lanka were 14.6 and 6.7 per 1000 mid-year population respectively. Net Migration Rate was -4.5 per 1000 population.

3.2.1 Calculate the growth rate. *(10 marks)*

3.2.2 Calculate the population doubling time. *(5 marks)*

3.3 Accidents and injuries are a major source of childhood morbidity and mortality and are preventable in most instances.

3.3.1 List the home risk factors that predispose children for accidents and injuries. *(15 marks)*

3.3.2 Briefly describe the measures to prevent accidents and injuries in a domestic environment. *(35 marks)*

Part D

4.

4.1 Dr. Fernando is a full time private general practitioner in Koggala. A large proportion of his patients are garment factory workers employed in the free trade zone, Koggala. Describe the role of Dr. Fernando in prevention and control of occupational health problems in garment factory workers in free trade zone, Koggala.

(50 marks)

4.2 4.2.1 List **five (5)** reasons for rapid spread of infectious diseases among urban slum communities.

(15 marks)

4.2.2 Briefly describe the measures that can be adopted to control the infectious disease outbreaks in these communities.

(35 marks)

Part E

5. A research team in Sweden wanted to investigate whether there is a relationship between birth defects and cigarette smoking habits of mothers. A study was designed with 4000 mothers, recruited at their booking visit and followed up until delivery. Smoking habit was measured by a questionnaire that identified 1500 mothers as smokers. A neonatologist diagnosed 400 babies with birth defects among mothers who smoke and 150 babies with birth defects among non-smoking mothers.

5.1 What is the study design that corresponds with the above description? State the reasons for your answer.
(30 marks)

5.2 Calculate **three (3)** measures of association between birth defects and cigarette smoking habits of mothers.
(70 marks)