

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**MSc (COMMUNITY MEDICINE)/COMMUNITY DENTISTRY) EXAMINATION –**  
**MAY 2022**

**Date:** 5<sup>th</sup> May 2022

**Time:** 9.00 a.m. – 12.00 noon

**PAPER I**

Community Medicine candidates should answer **all six (06) questions in Parts A and B.**

Community Dentistry candidates should answer **all six (06) questions in Parts A and C.**

Each question to be answered in a separate book.

**Part A**

1. A researcher wishes to estimate the risk of smoking for development of a rare pancreatic cancer.
  - 1.1. Giving reasons, indicate an appropriate study design. (20 marks)
  - 1.2. Giving reasons, describe the study participants that you would select for this study. (20 marks)
  - 1.3. Discuss four (04) potential biases that you are likely to encounter and how they can be minimized. (40 marks)
  - 1.4. Outline how confounding can be controlled in this study. (20 marks)
2.
  - 2.1. Given below is part of the output of a simple linear regression analysis of Body Mass Index (BMI) on waist circumference.

Table 1: ANOVA Table

Source	Sums of Square	df	Mean Square	F statistic
Regression	4293.135	<b>A</b>	<b>C</b>	<b>E</b>
Residual	2266.903	<b>B</b>	<b>D</b>	
Total	6560.038	396		

Dependent variable: BMI

Independent variable: Waist circumference

- 2.1.1. Calculate A, B, C, D and E (25 marks)
- 2.1.2. Calculate the variation in BMI explained by waist circumference. (05 marks)
- 2.1.3 State two (02) assumptions of simple linear regression. (20 marks)

Contd...../2-

2.2. The following table gives the output of the regression analysis. Assume that the mean waist circumference of the sample is 90cm.

Table 2: Output of the regression analysis

Model	Unstandardized Coefficients		Standardized coefficients	t	Significance
	B	Std Error	Beta		
(Constant)	0.401	0.878		0.457	0.648
Waist circumference	0.275	0.010	0.809	27.351	0.000

2.2.1. Calculate the mean BMI of the sample. (10 marks)

2.2.2. Calculate the 95% confidence interval of the regression coefficient for waist circumference. (20 marks)

2.2.3. Interpret the results. (20 marks)

### 3. Demography

3.1. Describe the difference between

3.1.1. Gross Reproduction Rate and Net Reproduction Rate. (15 marks)

3.1.2. Crude death rate and age standardized mortality rate. (15 marks)

3.2. Calculate the total dependency ratio for the year 2018 as per the information given in the table below. (20 marks)

Table: The percentage distribution of population by age groups in Sri Lanka.

Year	0-14 years	15-59 years	60 years and over
1911	40.9	54.8	4.3
1946	37.2	57.4	5.4
1971	39.0	54.7	6.3
1981	35.2	58.2	6.6
2001	26.3	64.5	9.2
2012	25.2	62.4	12.4
2018	25.2	62.4	12.4

Contd...../3-

- 3.3. Explain the meaning of total dependency ratio in 2018 to a lay person. (10 marks)
- 3.4. Giving reasons, indicate in which year Sri Lanka had the opportunity to benefit from the demographic dividend. (20 marks)
- 3.5. Calculate the aging index in 2018 and explain it to a lay person. (20 marks)

### Part B

- 4.
- 4.1. Define anaemia during pregnancy. (15 marks)
- 4.2. List five (05) adverse health implications of maternal anaemia on the mother and/or the neonate. (15 marks)
- 4.3. List five (05) current routine programmatic interventions at divisional level for prevention and management of maternal anaemia in Sri Lanka. (25 marks)
- 4.4. Critically discuss three (03) programmatic interventions listed in Question 4.3. (45 marks)
5. At a construction site, a 20-storey apartment complex with 45 housing units is being built. This apartment complex is proposed to have a swimming pool, a mini supermarket and a gym and is considered a major construction project. On average 500 employees (skilled and unskilled) work at this site daily.
- 5.1. Name two (02) physical hazards and two (02) biological hazards that you anticipate at this construction site. (20 marks)
- 5.2. As the Medical Officer of Health (MOH) briefly describe how you would advise the health and safety manager of the site to manage the health risks of **one of the**
- 5.2.1 physical hazards mentioned in 5.1. (40 marks)
- 5.2.2 biological hazards mentioned in 5.1. (40 marks)

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6. You are a newly appointed MOH and want to assess the food safety and hygiene situation in food handling establishments in your area.
- 6.1. Briefly describe the advantages of using the H 800 Form in assessing food handling establishments. (20 marks)
- 6.2. Describe briefly how you would assess the performance of Public Health Inspectors (PHII) in relation to food control activities using the H800 form available with the PHII and the food handling establishments. (30 marks)
- 6.3. The assessment revealed that food control activities are not satisfactory. Describe the actions that you would take to improve the performance of PHII regarding food control activities in your area. (50 marks)

### Part C

7. The following table shows the data related to 12-years olds obtained from three National Oral Health Surveys (NOHS) in Sri Lanka conducted in 1994/1995, 2002/2003 and 2015/2016.

Table : National Oral Health Surveys

Year of NOHS	Mean DT	Mean MT	Mean FT	Mean DMFT
1994/1995	1.2	0.1	0.2	1.4
2002/2003	0.7	0.07	0.11	0.88
2015/2016	0.4	0.1	0.1	0.6

DT – Decayed teeth      MT – Missing teeth      FT- Filled teeth

- 7.1. Describe the trends observed and the possible reasons for the trends. (40 marks)
- 7.2. Explain the implications of these findings for the delivery of oral health care in Sri Lanka. (30 marks)
- 7.3. Explain how the quality of data obtained from the NOHSs can be improved. (30 marks)

8. Outline the challenges Sri Lanka faces in

8.1. the provision of oral healthcare for the ageing population. (30 marks)

8.2. improving periodontal health. (30 marks)

8.3. oral health promotion of preschool children. (40 marks)

9.

9.1. Outline the actions of fluorides in the prevention of dental caries. (15 marks)

9.2. "Topical fluorides are more appropriate compared to systemic fluorides for preventing dental caries in Sri Lanka" Discuss the above statement. (25 marks)

9.3. Outline the key messages that you would give to the following groups with regard to the use of fluoride.

9.3.1. People living in areas with high levels of fluoride in ground water. (20 marks)

9.3.2. Pregnant mothers. (20 marks)

9.3.3. Parents of children below 3 years of age. (20 marks)

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**EXAMINATION – MAY 2022**

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**Time:** 9.00 a.m. – 12.00 noon

**PAPER II**

**Answer all six (06) questions.**

**Each question to be answered in a separate book.**

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- 1.1. The outcome of all confirmed cases of COVID-19 in a district with a population of 700,000 in the year 2021 is given in the table below.

<b>Outcome</b>	<b>Total</b>
Death	460
Cured	8750

- 1.1.1 Calculate the cumulative incidence of COVID-19 in this district in 2021. (10 marks)
- 1.1.2 Calculate the case fatality rate of COVID-19 in this district. (10 marks)
- 1.2. Sri Lanka introduced vaccination against COVID-19 in January 2021. Five different types of vaccines are being used in the country under the Emergency Use Authorization. At the initial phase of the COVID-19 vaccination programme, Sri Lanka identified priority groups for vaccination considering the availability of limited COVID-19 vaccine stocks.
- 1.2.1. List four (04) priority groups identified by the Sri Lankan health authorities at the initial phase of vaccination and briefly explain the reasons (rationale) for the selection of each. (40 marks)
- 1.2.2. Describe briefly, the importance of post-marketing AEFI (Adverse Events Following Immunization) surveillance for COVID-19 vaccination. (40 marks)

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2. Sri Lanka has been certified as an endogenous measles eliminated country in 2020. Stringent surveillance and strengthening vaccination should be continued to prevent possible measles outbreaks in the country.
- 2.1. Define “**control**”, “**elimination**” and “**eradication**” phases of communicable diseases and give one example of a vaccine preventable disease in Sri Lanka for each of the defined phases. (30 marks)
- 2.2. A suspected measles case in a child aged 12 years has been reported in a base Hospital. Briefly describe the activities to be carried out by the staff at this base hospital and the relevant Medical Officer of Health (MOH) office. (40 marks)
- 2.3. Briefly describe the rationale for continuing stringent case-based surveillance and outbreak response for already eliminated vaccine preventable diseases. (30 marks)
3. The socio-ecological model consists of individual, family, institutional, community and policy levels affecting health.
- 3.1. For each of the community and policy levels of the socio-ecological model, list two (02) modifiable determinants of obesity among employees in a workplace. (20marks)
- 3.2. List the three (03) strategies of health promotion (15 marks)
- 3.3. For one determinant mentioned in 3.1, outline one (01) intervention for each of the strategies listed in 3.2. (30 marks)
- 3.4. Describe the relevance of multi-sectoral involvement at the divisional level to address obesity through the socio-ecological model. (35 marks)

Contd...../3-



4. The National Injury Prevention and Management Programme has identified gaps in reporting injury and the need to strengthen the injury surveillance system in the country.
  - 4.1. Outline the steps in program management that should be taken by the national programme to improve injury surveillance information. (40 marks)
  - 4.2. The programme indicates that the Director General of Health Services (DGHS) should communicate the need to strengthen the injury surveillance system to all hospitals. Describe the format of such communication. (30 marks)
  - 4.3. The communique also mentions that after a period of 6 months, performance on surveillance in all hospitals will be reviewed at the Health Development Committee (HDC) meeting chaired by the DGHS. Describe two indicators that can be used to assess the performance of injury surveillance in this review. (30 marks)
  
5. The District Medical Officer of Non-Communicable Diseases (MO/NCD) informed the MOH that several domestic LP gas related accidents had been reported within a week in an area of the MOH division.
  - 5.1. List the data sources that can be used to verify this information and describe the process of verification. (30 marks)
  - 5.2. If this information is verified, describe the steps that should be taken to investigate this situation. (40 marks)
  - 5.3. The investigation revealed that some of the accidents were associated with poor practices at the user level. Outline the key messages that should be given by the Public Health staff to the consumers to prevent future accidents. (30 marks)
  
6.
  - 6.1. Name three (03) soft skills that a professional should possess. (15 marks)
  - 6.2. As a MOH in a semi-urban area, you have decided to conduct a programme to improve happiness and productivity in a small garment factory where 25 young women are working. Outline your programme elaborating on the strategy. (45 marks)
  - 6.3. Critically discuss the statement: 'The present economic and political crisis in Sri Lanka has led to poor mental wellbeing among its people'. (40 marks)

