

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

**MSc (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)**  
**EXAMINATION**  
**NOVEMBER 2013**

Date : 25<sup>th</sup> November 2013

Time ; 1.00p.m.- 4.00p.m.

**PAPER I**

**Answer all five (05) questions.**

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

1. The calculated minimum sample size for a cohort study to determine the incidence of "Adverse Events Following Immunization" during infancy was 2000. The investigators expected a "loss-to-follow up" of 20%.
  - 1.1. Discuss briefly the implications of "loss-to-follow up" in this study. (40 marks)
  - 1.2. Outline a course of action to deal with "loss-to-follow up"; (60 marks)
2. Compare and contrast
  - 2.1. Internal validity and external validity (50 marks)
  - 2.2. Type I error and type II error (50 marks)
3.
  - 3.1. Discuss the following with reference to Sri Lanka.
    - 3.1.1. The effect of "Total fertility rate" on "Replacement level fertility" (25 marks)
    - 3.1.2. Human development index (25 marks)
  - 3.2. Pamala is a Medical Officer of Health. She often loses her temper with the rest of the staff which has led to a stressful situation in the entire team. Pamala wants to overcome this weakness in her.

Discuss the methods she could use to control her temper. (50 marks)

4.
  - 4.1. List the parameters applicable to assess the quality of drinking water. (10 marks)
  - 4.2. Describe briefly the water quality surveillance system in Sri Lanka. (30 marks)
  - 4.3. Discuss the challenges encountered by the field health staff when implementing the present water quality surveillance system. (60 marks)
  
5.
  - 5.1. Discuss the safety measures included in relation to machinery and other equipment in the Factories Ordinance of Sri Lanka. (30 marks)
  - 5.2. You are the Medical Officer of Health, Dompe and have planned a visit to a rubber products manufacturing factory in your area. Describe the aspects that you would evaluate during a "walk through survey in the factory". (40 marks)
  - 5.3. In a workplace with recycling of lead-acid batteries, the workers were found to have high lead levels in blood. List the engineering control measures that could be recommended to control exposure to lead. (30 marks)

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**PAPER II**

**Answer all five (05) questions.**

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

1. A breast cancer screening program has been planned in a hospital.
  - 1.1. List the features of a good screening test. (20 marks)
  - 1.2. Describe the reasons for considering breast cancer as a suitable disease for screening. (30 marks)
  - 1.3. The screening test (mammography) was done on 1000 women, of whom 100 were positive for the test. According to the gold standard confirmatory test (fine needle aspiration cytology/ FNAC), there were 120 who were test positive. 90 women gave positive results for both screening and confirmatory test. Comment on the validity of the screening test. (50 marks)
  
2. The residents of Rathupaswela alleged that they have faced acute health problems owing to contamination of their water supply due to chemicals released by a factory in the area. You are requested to conduct a research study to answer this question.
  - 2.1. State a suitable study design, giving reasons. (25 marks)
  - 2.2. Define the study population, giving eligibility criteria. (25 marks)
  - 2.3. Discuss the limitations in interpreting the results obtained from this study. (15 marks)
  - 2.4. Critically discuss the role of the health sector in managing this situation. (35 marks)

3.

- 3.1. A researcher conducted a prospective cohort study to determine whether there is a difference in the mortality following Coronary Artery Bypass Graft (CABG) between Hospital A and Hospital B. Results obtained are given in Table 1

Table 1. Number of deaths by hospital

Hospital	No. of deaths	No. of CABG
A	75	1010
B	110	1250

3.1.1. What is the most suitable measure to assess the risk of mortality between the two hospitals? (05 marks)

3.1.2. Calculate the above risk. (15 marks)

- 3.2. Further analysis was performed according to the age categories ( $\leq 60$  years and  $> 60$  years) of the patients. Results obtained are given in Tables 2 and 3.

Table 2. Number of deaths among the patients  $< 60$  years of age

Hospital	No. of deaths	No. of CABG
A	60	895
B	95	905

Table 3. Number of deaths among the patients  $> 60$  years of age

Hospital	No. of deaths	No. of CABG
A	15	115
B	15	345

It has been definitely determined from several studies that sex is not an independent risk factor for CABG mortality. Based on the information provided in Tables 2 and 3,

3.2. 1. What further calculations would you consider when reporting the relative risk of Hospital A versus Hospital B ? (50 marks)

3.2.2. Comment on the findings. (30 marks)

4. Based on previous cross-sectional studies, it is hypothesized that married women with unintended pregnancies are more likely to undergo induced abortions. Design a study, giving reasons to test this hypothesis.

(100 marks)

5

- 5.1. A Medical Officer of Health in a rural area observed that the number of teenage pregnancies have increased in the area over the last few years. Therefore, a study was conducted in a sample of women in the reproductive age group to estimate the age at first sexual exposure. The following results were obtained:

Mean age of first sexual exposure	=18 years
Standard deviation	= 3 years

Determine whether women in the area have a significantly lower mean age of first sexual exposure compared to the average age of 24 years at first sexual exposure of women in the reproductive age group in Sri Lanka.

(60 marks)

- 5.2. During a follow-up of 200 diabetic patients at a regular diabetic clinic, 80 patients were identified with poor compliance to anti-diabetic drugs, whereas other 120 were taking the drugs regularly. There were 35 and 30 cases of Peripheral Vascular Disease (PVD) detected during the follow-up period among the patients with good compliance and poor compliance, respectively.

5.2.1. Calculate the proportions of PVD among the patients according to their drug compliance. (10 marks)

5.2.2. Determine whether there is an association between occurrence of PVD and compliance to anti-diabetic drugs. (30 marks)

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**PAPER III**

**Community Medicine candidates should answer all five questions in Parts A and B.**

**Community Dentistry candidates should answer all five question in Parts A and C.**

**Answer each part in a separate book.**

**PART A**

1. You are appointed as a Medical Officer of Health (MOH) in the Central Province and you observe that there is excess sugar consumption within the plantation sector. At the monthly conference, you decide to carry out a health promotion programme with the help of the MOH staff.

- 1.1. Outline the steps of a programme to address the above problem.  
(40 marks)

Provincial Director of Health Service (PDHS) has requested all MOHs to establish nutrition clinics at MOH level for mothers and children who require special nutrition guidance.

- 1.2. List the factors that have to be considered to establish these clinics.  
(30 marks)
- 1.3. Describe briefly an advocacy programme for fund raising to establish these clinics.  
(30 marks)

- 2.
- 2.1. Discuss the role of the Medical Officer of Health (MOH) in preventing
- 2.1.1. gender based violence among pregnant mothers. (35 marks)
- 2.1.2. bullying among secondary school children. (30 marks)
- 2.2. Outline how you would improve the psychosocial well-being of primary school children. (35 marks)

3. The Migration Health policy in Sri Lanka addresses health of different types of migrants at different phases of migration. It also addresses the health of families that are left behind.
  - 3.1. List the stakeholders who were involved in the policy process with regard to issues of migrants. (25 marks)
  - 3.2. State three (03) important interventions that resulted from this policy (15 marks)
  - 3.3. Discuss the effect of women migrating overseas on children 's well being. (60 marks)

### **PART B**

4. You are working as the MOH in a semi urban area "X" with a population of 80,000.
  - 4.1. List the steps you would take to set up adolescent health services in your area. (40 marks)
  - 4.2. State briefly the measures you can employ to increase access to health services by young persons in your area. (30 marks)
  - 4.3. Discuss the barriers in providing contraceptive services for sexually active adolescents in your area. (30 marks)
  
5. Critically discuss the following statements:
  - 5.1. "According to Reproductive Health Management Information System (RH-MIS), the population coverage for syphilis screening is 98% in year "X". In the same year, National STD/ AIDS control programme reported 10 cases of suspected congenital syphilis cases". (35 marks)
  - 5.2. "A rising incidence of children with special needs is a proxy indicator of inadequate newborn care". (35 marks)
  - 5.3. "Burden of oral disease in children is a predictor of non communicable diseases in adulthood". (30 marks)

### PART C

6

- 6.1. List three (03) main duties of a School Dental Therapist (SDT). (15 marks)
- 6.2. The following table is based on the annual work performance of two SDTs in a district.

	Percentage with dental caries detected at screening	
	Grade 4	Grade 7
DT - A	8%	20%
SDT - B	12%	25%

- 6.2.1. List three (03) possible reasons for the differences in the caries percentages detected between the two SDTs. (15 marks)
- 6.2.2. How would you verify the accuracy of the above data? (30 marks)
- 6.2.3. What measures would you take to reduce the caries prevalence in the two age groups? (40 marks)
7. Write notes on:
- 7.1. Role of the dental surgeon in preventing non communicable diseases. (40 marks)
- 7.2. Surveillance system for Out Patient Department (OPD) dental clinics. (30 marks)
- 7.3. Poverty and oral health. (30 marks)



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**PAPER IV**

**Community Medicine candidates should answer all five questions in Parts A and B.**

**Community Dentistry candidates should answer all five question in Parts A and C.**

**Answer each part in a separate book.**

**PART A**

1.
  - 1.1. Define "emerging infectious diseases" (10 marks)
  - 1.2. List five (05) emerging infectious diseases which will cause potential global threats in the coming years. (10 marks)
  - 1.3. Describe the key factors contributing to the appearance of emerging re-emerging infectious diseases. (80 marks)
  
2.
  - 2.1. Describe the possible reasons for the occurrence of measles outbreaks in a country with reported high measles vaccination coverage over the years. (50 marks)
  - 2.2. What control activities would you carry out as a Medical Officer of Health, during a measles outbreak ? (50 marks)

3. "Dengue fever is a major public health problem in Sri Lanka"
- 3.1. Describe the trends in incidence, mortality and case fatality rates of dengue fever in Sri Lanka between 2000 to 2012. (30 marks)
  - 3.2. List the public health challenges faced by field level health workers in the control of dengue fever in Sri Lanka. (30 marks)
  - 3.3. List the main activities that should be included in a plan to prevent and control dengue fever in a semi-urban Medical Officer of Health area. (40 marks)

### **PART B**

- 4.
- 4.1. List four (04) sources of information regarding the occurrence of acute diarrhoeal diseases in Sri Lanka. (20 marks)
  - 4.2. Describe the advantages and disadvantages of each source mentioned in 4.1. (40 marks)
  - 4.3. Discuss the preventive and control measures of diarrhoeal diseases among children less than 5 years of age in Sri Lanka. (40 marks)
- 5.
- 5.1. List the data/information available at the Medical Officer of Health (MOH) level that can be used to prevent and control communicable diseases. (25 marks)
  - 5.2. Describe as a MOH, how you would utilize surveillance data for effective control of communicable diseases. (50 marks)
  - 5.3. MOH area "X" has reported an average number of 5-10 typhoid cases annually during the last 5 years. In the past 3 months, a total of 25 cases have been reported from the same area.  
  
List the possible causes for the increase in the reported typhoid cases. (25 marks)

## PART C

6.
  - 6.1. "Incidence of oral cancer has remained unchanged from 2000 to 2007 in Sri Lanka". Discuss the possible reasons for the above situation. (20 marks)
  - 6.2. Discuss the advantages and limitations of the 'Oral Cancer and Oral Potentially Malignant Disorders screening programme in Sri Lanka'. (50 marks)
  - 6.3. As a Regional Dental Surgeon describe how you would evaluate a screening programme for oral cancer in your district. (30 marks)
  
7.
  - 7.1. List four (04) primary causes of periodontal disease. (20 marks)
  - 7.2. Describe the key epidemiological features of periodontal diseases. (40 marks)
  - 7.3. Based on the Ottawa Charter for Health Promotion, describe the various public health approaches that could be used for the prevention and control of periodontal disease. (40 marks)