

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE) EXAMINATION
APRIL, 1990

Date : 16th April, 1990

Time: 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

1. Outline the steps involved in planning a research activity aimed at "assessing the pattern of family planning acceptance" in a province in Sri Lanka (100 marks)

2. Discuss the advantages and disadvantages of the following;
 - 2.1 use of a self-administered questionnaire (30 marks)
 - 2.2 observational techniques in service oriented research (35marks)
 - 2.3 a cohort study in identifying the risk factors in hypertension (35 marks)

3. Discuss briefly the following sampling technique indicating the advantages and disadvantages of each of the approaches.
 - 3.1 cluster sampling (50 marks)
 - 3.2 probability proportional to size (50 marks)

4. Discuss the problem of confounding in epidemiological studies. (100 marks)

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MD(COMMUNITY MEDICINE) EXAMINATION
APRIL, 1990

Date :17th April, 1990

Time : 9.00 a.m.- 11.00 a.m.

PAPER II

Answer all four questions

1. 363 male cigarette smokers aged less than 60 years who survived the first heart attack by at least 2 years were categorised by smoking habits. Patients were followed up to determine the cessation of smoking habits and subsequent mortality. The table below summarises the findings:

	Survival at 2 years	
	number dead	number alive
"Continued" smokers	19	135
"Stopped" smokers	15	194

Calculate the epidemiological rates useful to compare the mortality experiences of those who stopped smoking with those who continued to do so. (50 marks)
What conclusions may be drawn? (50 marks)

2. What is the rationale for carrying out a 'test of statistical significance'? Give an example of one such test, demonstrating your understanding of the following:
- 2.1 Null hypothesis (25 marks)
 - 2.2 Choice of the test (25 marks)
 - 2.3 Level of significance (25 marks)
 - 2.4 Interpretation of different possible outcomes (25 marks)
3. A study of the relationship between systolic blood pressure (SBP) and weight(W) in a sample of 40 school children gave a correlation coefficient of 0.6 which was found to be statistically significant at the 50% level. Explain what this means, illustrating your answer if necessary. (100 marks)
4. It has been shown that an association exists between blood levels of lead and the intelligence quotient (I.Q) in children. What factors would you take into consideration in determining causality? (100 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE) EXAMINATION - PART I
APRIL, 1991

Date :16th April, 1991

Time:- 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all questions

1. You have been asked by a medical journal to referee a paper entitled "a case control. study of the efficacy of BCG vaccination in an urban area of country X". Outline the points you will consider before recommending whether or not the paper should be accepted for publication.
2. Write notes on,
 - i. the epidemiological implications of repeatability
 - ii. the predictive value
3. A prison Medical Officer examined 280 men convicted of homicide classifying them into those with a history of habitual violence when drunk (group A and the remainder (group B). The examination included laboratory tests and the results for serum cholesterol (mmol/l) were as follows;

Age in years	n	Gp A	SD	n	Gp B	SD
< 20	21	4.13	0.58	9	5.6	(0.41)
21- 30	53	4.88	0.64	19	6.18	(0.66)
31- 40	47	5.75	1.19	30	6.66	(0.89)
41- 50	22	5.74	0.77	30	6.74	(1.09)
> 50	30	5.69	1.01	19	6.44	(0.64)

In his published report, he concluded that a low serum cholesterol level is a good indicator of habitual violence".

Discuss the study, the results and the conclusion extensive calculations are not necessary

4. Discuss important features to consider when designing a self-administered questionnaire.

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MD (COMMUNITY MEDICINE) EXAMINATION - PART I
APRIL, 1991

Date :18th April, 1991

Time : 9.00 a.m. - 11.00 a.m.

PAPER II

Answer all questions

1. What are the sources of bias in a controlled trial?
How may they be dealt with?
2. A national cohort study of febrile convulsions in children gave data on the No. of convulsions before the age of 5 years according to the age at the first convulsion

	No. of Convulsions				Total
	1	2	3	4+	
Age at 1st convulsion	77	19	15	21	132
in years					
0-1	48	7	3	4	62
2-4					
Total	125	26	18	25	194

Calculate the value of X^2 (3 d.f.) for this table and comment on its interpretation. Suggest briefly any further analysis, which might be appropriate.

3. Discuss the value of matching in the design of case-control studies with examples.
4. It has been suggested that heavy work during pregnancy may increase the risk of premature delivery and perinatal mortality. Discuss how you might test this hypothesis.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) EXAMINATION
APRIL, 1992

Date : 28th April, 1992

Time : 9.00 a.m.- 11.00 a.m.

PAPER I

Answer all four questions.

1. Describe the biases that may arise in a case-control study of risk factors for diarrhoea among children under five years of age and how they may be minimised.
 - 1.1. in a hospital setting
 - 1.2. in a community setting. (100 marks)

2. Give an outline of a study to determine the association between the use of oral contraceptives and breast cancer among females. (100 marks)

3. Describe how you could evaluate the effect of an intervention programme of health education designed to increase the use of contraception for family Planning.

Assume that you have collected relevant data prior to the intervention. The intervention programme was conducted in one-half of an area of the medical officer of health with a population of 100,000, the other one-half serving as the control. (100 marks)

4.
 - 4.1 What precautions should be taken in constructing a questionnaire for a community health survey. (25 marks)
 - 4.2 List the advantages and disadvantages of open and closed questions. (25 marks)
 - 4.3 What training should you give a team of interviewers regarding the administration of the questionnaire. (25 marks)
 - 4.4 How could you test for the validity of the information obtained. (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) EXAMINATION
APRIL, 1992

Date: 28th April, 1992

Time : 2.00 p.m.- 4.00 p.m.

PAPER II

Answer all four questions.

1. List the possible sources of error you might encounter where measurements of blood pressure are taken in a study to assess the prevalence of hypertension in a community. (30marks)
How would you attempt to minimise such errors? (70 marks)

2. Indicate the sampling procedures you would select to carry out the following studies:
 - 2.1 a survey of parasitic disease among children attending a child welfare clinic (30 marks)
 - 2.2 a study of dental caries among children in the education district of Colombo (35 marks)
 - 2.3 a study of coverage of immunisations during infancy, in a province in Sri Lanka. (35 marks)

Discuss the advantages/disadvantages of the method of sampling selected, in each of the situations.

3. Discuss the differences between,
 - 3.1 Relative risk and odds ratio (35 marks)
 - 3.2 Direct and indirect standardisation (35 marks)
 - 3.3 Total fertility rate and net reproductive rate (30 marks)

4.

- 4.1 The lecithin/sphingomyelin (L/S) ratio was determined in amniotic fluid samples taken from a group of 430 high-risk pregnant women. An L/S ratio greater than 2 was used as an index of foetal lung maturity. Following delivery, 356 infants had no respiratory problems, although an L/S ratio of less than 2 has been recorded in 29 of them. Seventy-four (74) infants developed respiratory problems, of whom 69% had had L/S ratios below 2.

What conclusions could you draw on the usefulness of this test in predicting the development of respiratory problems.

(40 marks)

What recommendations would you make regarding the "cut off level" of L/S ratio to improve the usefulness of this test in predicting the development of respiratory symptoms.

(20 marks)

- 4.2 The results obtained from a longitudinal study where risk factors for myocardial infarction were studied, are given below:

Development of myocardial infarction after 16 yrs. among men aged 35-44 yrs; by level of serum cholesterol.

Serum cholesterol mg%	Developed MI	Did not develop MI
More than 250	10	125
250 or less	21	449

What conclusions could you draw from the above?

(40 marks)

POSTGRADUATE, INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY) EXAMINATION
SEPTEMBER, 1992

Date : 29th September, 1992

Time : 9.00 a.m. - 11.00 a.m.

PAPER I

Answer all four questions.

1. Describe the errors that may affect the reliability of data collected at a medico-social survey. How could maximum reliability be ensured? (100 marks)

2. Discuss the advantages and disadvantages of cohort and case-control methodologies in a study of risk factors for diarrhoea (enteric infection) among children age 5 years and under (100 marks)

3. Describe how a clinical trial should be conducted to test the effectiveness of drugs A and B that have been claimed to be effective for a particular disease. How could the difference observed be tested for statistical significance (100 marks)

4. Write notes on the following,
 - 4.1. Test of significance for an odds ratio (30 marks)
 - 4.2. 'Chi square' test (40 marks)
 - 4.3. 'Power' of a study (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY) EXAMINATION
SEPTEMBER, 1992

Date: - 30th September, 1992

Time : 9.00 a.m. - 11.00 a.m.

PAPER II

Answer all four questions.

Each questions should be answered in a separate book.

1. Describe the steps that should be followed in designing a national level study on the health status of "Elderly" (those of age 60 years and over) in Sri Lanka
(100 marks)

2. Write notes on the following,
 - 2.1. Determination of sample size (30 marks)
 - 2.2. Confidence interval (35 marks)

3. Confounding variables (35 marks)
 - 3.1. When an enzyme-linked immunisorbent assay (ELISA) for HIV antibodies was carried out in 200 patients with AIDS, 194 of them were found to be positive. When the test was carried out in 600 healthy people, the test was positive only in 12 healthy individuals.
 - 3.1.1. What information could you gather regarding the validity of the ELISA test
(40 marks)
 - 3.1.2. Comment on the usefulness of the ELISA as a screening test
(30 marks)
 - 3.2. It is assumed that the ELISA test has the same sensitivity for healthy carriers of HIV virus as for AIDS patients and is used in a screening programme in a blood bank where 2,000,000 units of blood are screened each year. The 'true' prevalence of HIV infection among the blood donors is 1/10,000. How many contaminated blood samples would escape detection each year?
(30 marks).

4.

- 4.1. In a clinical trial of 3 anaesthetics A,B,C (one of which A has been in use for many years), patients were randomly allocated to one of the anaesthetics. Table given below records the number of cases of 'serious nausea' reported by the patients.

Serious nausea	Anaesthetic			Total
	A	B	C	
Yes	14	06	01	21
No	86	44	49	179
	100	50	50	200

It was concluded that anaesthetic C produced less of serious nausea, hence was the best of three drugs Indicate giving reasons, whether you are in agreement with the above conclusion. (50 marks)

- 4.2. In a study to compare the incidence of suicide, 60,000 people living in the "inner city" area and 190,000 people living in the suburbs of the same city were followed up for-10 years to find out how many of them committed suicide. 102 persons who lived in the inner city and 101 of those who lived in the suburbs committed suicide during this period. What conclusions could you draw from the above data? (50 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY) EXAMINATION
APRIL,1993

Date: - 24th April, 1993

Time : 2.00p.m. - 4.00 p.m.

PAPER I

**Answer all four questions,
Each question should be answered in a separate book.**

1. What possible errors could occur during a large anthropometric survey of school children.
Describe the action you would take to minimise them (100 marks)
2. Write notes on,
 - 2.1. Negative predictive value (25 marks)
 - 2.2. Operationalizing a variable (25 marks)
 - 2.3. Focus group discussion (25 marks)
 - 2.4. Ensuring confidentiality in HIV surveillance (25 marks)
3.
 - 3.1. The prevalence of a rare disease in a community is thought to be around 1%. Find the sample size necessary to obtain an estimate of the prevalence rate, with a maximum possible error of 0.2% (40 marks)
 - 3.2. In the above community it is suspected that differences in prevalence rate exist among different age groups and socio-economic groups. Discuss all the steps involved in drawing a sample. (60 marks)
4. The age-weight curves for male and, female babies (upto 3 months of age) are given below,

$$y^* = 2.5 + 0.8x + 0.05x^2 - \text{Males}$$

$$y^* = 2.4 + 0.75x + 0.07x^2 - \text{Females}$$

Where Y = weight (Kg) and X = age (months)

- 4.1. What is the difference in weights between male and female babies at birth? (10marks)
- 4.2. Comment on the rate of growth for male and female babies. (15 marks)
- 4.3. Show whether female babies equal the male babies in weight during the first 3 months (30 marks)
- 4.4. Discuss the danger of using these curves to predict the weight of babies above 3 months of age. (45 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY) EXAMINATION
APRIL, 1993

Date : 27th April 1993

Time : 9.00 a.m.- 11.00 a.m.

PAPER II

Answer all four questions.
Each part should be answered in a separate book.

PART I

1. Following a "going down" dinner at the University Canteen people started reporting to the University Medical officer with diarrhoea and/or vomiting. How would you investigate this outbreak? (100 marks)

2. Discuss the advantages and disadvantages of the following instruments for collecting data in Survey Research.
 - 2.1. Postal questionnaire (20 marks)
 - 2.2. Structured questionnaire (20 marks)
 - 2.3. Unstructured questionnaire (20 marks)
 - 2.4. How may the advantages be maximised and the disadvantages be minimised? (40 marks)

PART II

3. A survey of 2680 adult males in provincial town A revealed 678 with cough. The distribution of smoking habits of these men are given in Table 1

Table 1

Smoking habits of men surveyed in town A

non smokers	1500
ex smokers	300
smokers/cigarettes per day	

Under 10	200
10 - 19	380
20 - 29	280
30 over	20
Total	2680

In a large national study of adult males of comparable age the distribution of the prevalence of cough by smoking habit was determined, the results of which are given in Table 2

Table 2
Percentage prevalence of cough by smoking habit

	Percentage with cough
non-smoker	8
ex-smoker	10

Smokers/cigarettes per day	
under 10	15
10 - 19	20
20 - 29	28
30 over	60

Is there evidence to suggest that provincial town A has a factor other than smoking that may contribute to the prevalence of cough observed.
(100 marks)

Perform any calculations that are necessary.

4. Define the following types of bias and explain how these can be minimised in an epidemiological study.
 - 4.1. Participation bias (25 marks)
 - 4.2. Recall bias (25 marks)
 - 4.3. Interview bias (25 marks)
 - 4.4. Digit preference (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE/COMUNITY DENTISTRY)
PART I EXAMINATION
APRIL , 1994

Date: 26th April, 1994

Time : 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

Each question should be answered in a separate book.

Statistical tables will be supplied.

1. Describe how you would design and conduct a study on "Instrument and observer variability for measurement of height" using 5 children. 5 measuring instruments and 5 observers. What statistical test would be used for the analysis of data?
(100 marks)

2. Comment on the methodology used in the following studies.
 - 2.1. Outstation telephone directory was used as the sampling frame in a prevalence study of diabetes among adult males of high social class.
(30 marks.)

 - 2.2. Students of a sample of Madya Maha Vidyalayas (Central Colleges) were examined to estimate the prevalence of goitre among children 5 to 18 years in Sri Lanka
(30 marks)

 - 2.3. In a study to determine the morbidity pattern of a community all mothers who brought pre-school children to the child welfare clinic were asked to recall the morbidity experience of their families during the past 3 months
(40 marks)

3. Write notes on,
 - 3.1. Use of confidence intervals for significance testing. (25 marks)

 - 3.2. Correlation coefficient. (25 marks)

 - 3.3. Information bias. (25 marks)

 - 3.4. Cluster sampling (25 marks)

4. The relationship between birth weight and height of the mother was, studied by linear regression analysis, and the following table was extracted from the computer output,

Analysis of variance for linear regression

Source of variation	Sum of squares (ss)	Degree of freedom (df)	Mean square (ms)
Regression on height of mother	1.48	1	1.4800
Residual	20.39	98	0.2081
Total	21.87	99	

The relationship can be expressed in the form of a regression equation as follows..
Birth weight (Kg) = a + b * height of mother (cm)

- 4.1. Is there a significant association between the two variables?
- 4.2. Calculate one statistic to describe the relationship between the two variables,.
- 4.3. Explain the terms a and b in the regression equation
- 4.4. If the calculated values for a and b are 1.025 and 0.0155 calculate the birth weight of an infant of a mother who is 145cm tall.

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOYIBO
MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
APRIL, 1994

Date :- 27th April, 1994

Time :- 9.00 a.m. - 11.00 a.m.

PAPER II

Answer all four questions.

1. As regional epidemiologist of area X, outline the steps you would follow in the setting up of a surveillance system for poliomyelitis. (100 marks)

2. In a case control study of infant feeding practices and risk of disease 200 cases and 200 controls were enrolled. It was observed that 22 of the 200 cases has never been breast fed when compared to 20 among the controls. The study group was divided into two social strata; high and low using information on the socioeconomic status of each infant. There were 160 infants in the high socioeconomic group and of these 40 were cases. In this group 38 had never been breast fed, out of which 12 were cases.
In the low socio economic group 80 were controls, 10 cases and 2 controls has never been breast-fed.
Discuss the results. (100 marks)

3. Write notes on,
 - 3.1 Ecological fallacy. (20 marks)
 - 3.2 Repeatability. (20 marks)
 - 3.3. Regression to the mean. (20 marks)
 - 3.4. Advantages and disadvantages of randomisation in clinical trials. (40 marks)

4.
 - 4.1 The age specific incidence rates of Breast Cancer for three different time periods are given in Fig.1.
The age specific incidence rates for 3 birth cohorts are given in Fig. 2.
The findings are from the same study, The incidence has been plotted on semi log paper.
Discuss the trends and comment. (60 marks)

Fig. 1_ Age – specific incidence of breast cancer in Iceland for the three time periods 1911-29, 1930-49, 1950-72. From Bjarnasson et al. (1974).

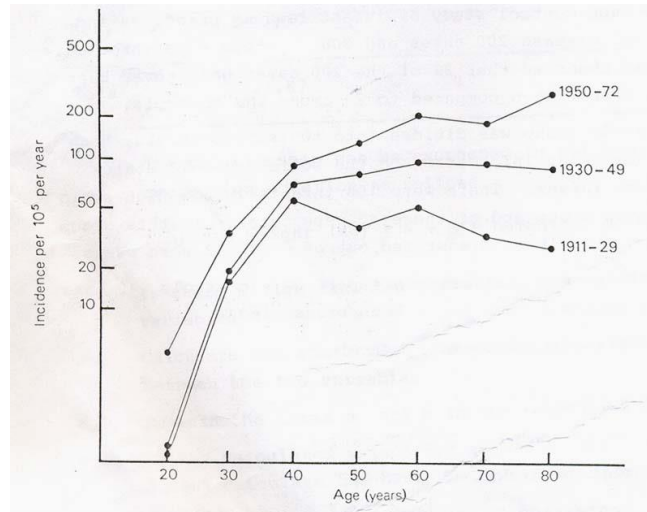
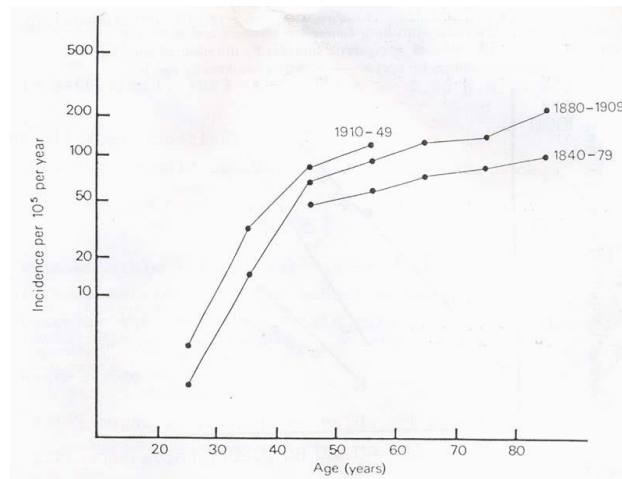


Fig , 2 Age-specific incidence of breast cancer in Iceland for three birth cohorts, 1840-1879, 1880-1909, 1910-1949. Adapted from Bjarnasson et al. (1974).



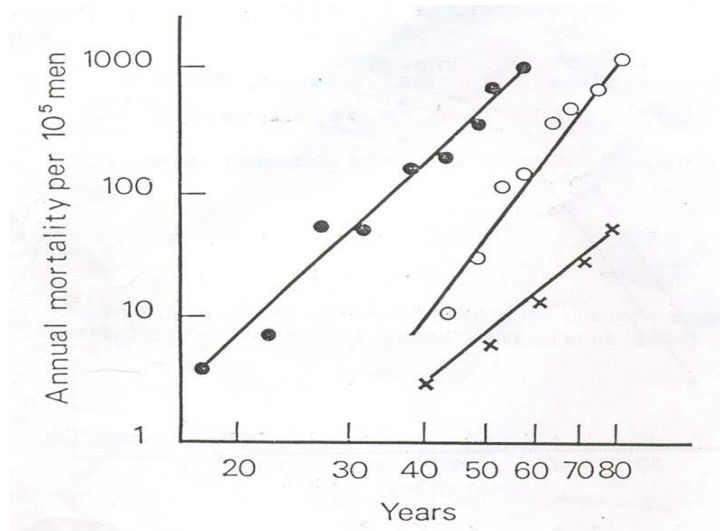
4.2. The following (Fig. 3) is from a paper written by Doll on the relationship between smoking and lung cancer.

4.2.1. Comment.

4.2.2. If you were to do a similar study which relationship would you concentrate on and why. (40 marks)

Fig. 3

Age-specific mortality rates from lung cancer for smokers and non-smokers, From Doll (1971). (0---0 = cigarette smokers by duration of smoking, 0-0 = cigarette smokers by age; X-X = non-smokers by age.)



POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1995

Date: 13th June, 1995

Time: 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

Each question should be answered in a separate book.

Statistical tables will be supplied.

1. Write an essay on "Use of mortality data in health management". (100 marks)

2. Comment on the hypothesis, methodology and the type of data analysis that may be used, in each of the following studies :-
 - 2.1. A researcher wishes to test the hypothesis that a given toothpaste reduces 'dental cavities'. A random sample of 18-year-olds are selected and all subjects were examined for the presence of cavities. A dentist then filled the cavities and all subjects were given free monthly supplies of the toothpaste for a period of 3 years. At the age of 21 years, all subjects were checked again for cavities. The researcher then, compared the number of cavities found in the initial dental checkup with the number found at the age of 21 years. (40 marks)

 - 2.2. An investigator wishes to establish whether there is a relationship between height at age 3 years and height at 21 years. A random sample of 3-year-olds were selected and heights measured. The researcher then patiently waited for another 18years and measured the subjects again. (30 marks)

 - 2.3. A researcher wished to 'discover' whether the differences in the age at menarche was related to the climate. Two groups of young women were selected, one from a temperate climate and one from a tropical climate. The subjects were matched according to both height and weight and then age at menarche were compared. (30 marks)

3. 100,000 persons were tested for HIV, using a multistage screening procedure. ELISA test was used in the first stage and Weston Blot in the second stage.

The sensitivity and specificity of ELISA test is 99% and 90% respectively and for Weston Blot, 90% and 98% respectively.

- 3.1. Calculate the positive and negative predictive values for the ELISA test, if the prevalence of HIV is 1 per 1000. (30 marks)
- 3.2. If the prevalence increases to 2 per 1000, what would the predictive values be? (20 marks)
- 3.3. Calculate the overall sensitivity and specificity at the end of the second stage of the screening test (30 marks)
- 3.4. What are the advantages of such a two stage screening procedure? (20 marks)
4. Comment on Figures 1, 2 and 3 (100 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1995

Date: 14th June, 1995

Time : 9.00 a.m. - 11.00a.m.

PAPER II

Answer all four questions

1.
 - 1.1 Describe the sources of controls and their selection for controlled clinical trials, indicating their advantages and disadvantages. (60 marks)
 - 1.2 Discuss the ethical considerations for controlled clinical trials. (40 marks)

2. Describe the measures that should be taken to ensure maximum reliability of data collected at a field survey. (100 marks)

3. Write notes on the following,
 - 3.1. Criteria that should be satisfied before a risk factor is said to approximate causality. (30 marks)
 - 3.2. Misclassification biases (40 marks)
 - 3.3. Advantages and disadvantages of using "open" and closed" questions in a community based descriptive study. (30 marks)

4. The prevalence rates of roundworm infestation in two villages A and B with 250 persons in each village were found to be about the same.

On stratifying by age, there were 250 persons less than 20 years and 250 persons 20 years and more.
In, village A, there were 60 and 190 in the younger and older age groups respectively.
Of a total of 105 infested with roundworm among the younger age group in both villages, 35 were in village
A while of a total of 50 infested among the older age group, 40 were in village A.

 - 4.1. Set out a 2 x 2 table for each age group (40 marks)
 - 4.2. What observations could be made from this data (20 marks)
 - 4.3. Is there a statistically significant difference in the prevalence of infestation between the two age groups? (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1996

Date: - 10th June, 1996

Time : 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

Each question should be answered in a separate book.

Statistical tables will be supplied.

1.

- 1.1. The haemoglobin level of 3 groups of children, A, B and C who were given diets 1,2 and 3 respectively were studied. The ANOVA table based on the data obtained from this study is given below

Variation	Sum of squares	df
Between groups	32.81	2
Within group	27.76	3

What conclusions can you draw from the above? (50 marks)

- 1.2. A random sample of 122 delinquent boys were selected and randomly divided into 2 groups. The researcher was interested in studying whether a new programme of therapy would affect the 'level of anxiety'. Boys in group I were given the new therapy, whereas those in Group II were not. Both groups were given an 'anxiety level' test (high score indicating more anxiety). The data were as follows

	Group I	Group II
Number in the group	61	61
Mean score	98	102
Sex	1.98	2.02

Were the differences between the groups significant? (50 marks)

2. The table shows the mortality rates (per million per annum) for diabetes mellitus in a population.

2.1. Comment (60 marks)

Time	Age in years			
	45 - 54	55 - 64	65 - 74	75 and over
1931 - 1940	144	603	1850	2857
1941 - 1950	139	570	1555	2696
1951 - 1960	49	250	817	1514
1961 - 1967	49	245	795	1527

2.2. Suggest appropriate interventions. (40 marks)

3. The relationship between breast cancer in mothers and daughters is to be investigated. The primary question is whether there is evidence for familial aggregation of breast cancer.

Suggest ways in which this relationship could be studied, discussing the advantages and disadvantages of such studies (100 marks)

4.

4.1 Describe the advantages and disadvantages of a self administered questionnaire on a knowledge, attitudes and practices (KAP) study of Sexually Transmitted Diseases (70 marks)

4.2. Describe the methods of controlling for confounding bias (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1996

Date : 11th June, 1996

Time :9.00 a.m.- 11.00 a.m.

PAPER II

Answer all four questions.

- 1 Write an essay on "Risk factors in epidemiological studies". (100 marks)
2. Describe the biases that may occur in,
 - 2.1. Selection of study samples
 - 2.2. Measurement of exposure and outcome in case-control studies, indicating how these biases may be prevented or minimized. (100 marks)
3.
 - 3.1. Describe the planning and conduct of a hospital-based double-blind clinical trial to test the efficacy of the presently used drug (A) compared with a new drug (B) in the drug treatment of disease (X)(Exclude data processing and drawing inferences.) (60 marks)
 - 3.2. Discuss the ethical considerations in the conduct of such a trial. (40 marks)
4. Two hospital based case-control studies were conducted to assess whether the presence of domestic animals in the house was a risk factor for infective diarrhoea among children under 5 years of age.
In the first study, of a total sample of 80 children under 5 years of age, 14 of them had domestic animals in the house, and in this group there were 10 cases of diarrhoea of a total of 40 cases of diarrhoea.

In the second study the total sample was increased to 400 and the proportions of houses with animals and cases of diarrhoea remained the same.

Test for association and comment on the results (100 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1997

Date: 27th June, 1997

Time : 9.00 a.m. - 11.00 a.m.

PAPER I

Answer all four questions.

Each question should be answered in a separate book.

Statistical tables will be supplied.

1. A community based intervention trial has been planned to answer the question "Does treatment of hypertension reduce the incidence of coronary heart disease"
 - 1.1. How would you decide on the number of subjects required for this trial indicating the information required for this purpose? (35 marks)
 - 1.2. It is possible that some subjects may not take the treatment. What effect would this have on the results of this trial. What can be done about it? (35 marks)
 - 1.3. In planning the study, the subjects have been randomly allocated for the study and the control groups. Table 1 lists some of the relevant initial (pre-treatment) characteristics of the two groups.

Table I

	Treatment Group	Control Group
Number	140	146
Age in years (mean and SD)	51.4 + 0.91	50.0 + 0.89
No. of Cigarette smokers	84	68
Systolic BP (mean and SD)	187 + 1.4	186 + 4.3
Diastolic BP (mean and SD)	101 + 5.0	102 + 4.3

Are you satisfied with the comparability of the groups? If not, what can be done to improve the usefulness of data. (30 marks)

2. A researcher plans to collect the following information during a household survey. Explain the ways in which the reliability of the data collected can be ensured.
 - 2.1. Age of an adult (20 marks)
 - 2.2. Blood pressure in an adult male (20 marks)
 - 2.3. Smoking habits of an 18 year old boy (30 marks)
 - 2.4. Satisfaction with services received as an in-patient in a government hospital (30 marks)

3.
 - 3.1. What is a historical (reconstructed) cohort study? As a Medical Officer in charge of a large factory, describe briefly how you would conduct a historical cohort study on the health effects of exposure to manmade mineral fibres. (40 marks)
 - 3.2. In a case control study (using hospital patients) of smoking in relation to peptic ulcer, an excess of cigarette smokers was found in the peptic ulcer group. List the main causes of bias that may arise in this comparison. (30 marks)
 - 3.3. There may be an association between wearing of constricting garments and varicose veins. Would a prevalence study (cross sectional) be appropriate for investigating this association. List the advantages and disadvantage. (30 marks)

4. Write notes on
 - 4.1. Focus group discussions (25 marks)
 - 4.2. Population attributable risk (25 marks)
 - 4.3. Predictive value (25 marks)
 - 4.4. Non parametric tests of significances (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMTO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 1997

Date: 27th June, 1997

Time : 2.00 p.m. - 4.00 p.m.

PAPER II

Answer all four questions.

1. Write notes on,
 - 1.1. Human development index (HDI) (25 marks)
 - 1.2. Net reproductive rate (NR) (25 marks)
 - 1.3. Systematic sampling (25 marks)
 - 1.4. "Nested" case control studies (25 marks)

2. The following study was carried out during January 1st to 31st March 1995 in a small town. All drivers applying for the renewal of their heavy vehicle license were invited to undergo HIV testing. Of the 800, 75% complied.

Distribution of test positives according to age.

Age	No. Tested	No. Positive
Below 45	400	40
45 or more	200	10
Total	600	50

- 2.1 What type of epidemiological study design is this? (10 marks)
- 2.2 What is the overall prevalence of HIV and the 95% confidence interval? (15 marks)
- 2.3. Is the above prevalence estimate likely to be biased? If so in which direction and why? (25 marks)
- 2.4. Is there an association between age and HIV prevalence? If so is the association statistically significant? (30 marks)
- 2.5. Can you suggest any reason for the association between age and HIV prevalence? (20 marks)

3.

3.1 An epidemiological survey was carried out to detect leprosy in a DDHS area in 1979. The survey was repeated in 1980. Following are the data collected:-

	1979		1980	
	Male	Female	Male	Female
Total Population	3400	3300	3500	3400
No. Examined 1st time	3200	3100	200	100
No. of cases among those examined 1st time	36	30	02	01
No. Re-examined	-	-	3000	2700
No. of cases among those re-examined	-	-	24	22
No. of cases with deformity	04	03	03	02
No. of new cases among those re-examined	-	-	09	06
No. of deformities among new cases in those re-examined	-	-	01	09

3.1.1 Calculate: (1) Rate of examination in,

(a) 1979

(b) 1980

(15 marks)

3.1.2. Rate of re-examination in 1980

(15 marks)

3.1.3. Prevalence of leprosy in 1980

(15 marks)

3.1.4. Incidence of leprosy in 1979

(15 marks)

3.1.5. Deformity rate in 1980

(15 marks)

3.2. Figure 1 and 2 represents the trends in Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR) from 1900 to 1990 in Sri Lanka drawn on ordinary graph paper (Fig. 1) and semi log graph paper (fig.2). Comment on the differences seen in the two figures.

(25 marks)

4. Presented below is a life table constructed for English men 1950 - 52.

English Life Table No. 11 1950 - 52 Males

x (age)	ix	dx	px	qx	exo
0	100,000	3,266	.96734	.03266	66.42
1	96,734	233	.99759	.00241	67.66
2	96,501	136	.99859	.00141	66.82
3	96,365	98	.99898	.00102	65.91
4	96,267	81	.99916	.00084	64.98
5	96,186	78	.99919	.00081	64.04
6	96,108	72	.99925	.00075	63.09
7	96,036	61	.99957	.00063	62.13
8	95,975	56	.99942	.00058	61.17
9	95,919	53	.99945	.00055	60.21
10	95,866	50	.99946	.00052	59.24

- 4.1. What stands for x, ix, dx, px, qx and exo in this life table? (10 marks)
- 4.2. How are the px, qx and exo calculated? (20 marks)
- 4.3. Explain why e_{10} is greater than e_0 (10 marks)
- 4.4. Discuss the use of life table technique in epidemiology. (60 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMO

MD (COMMUNITY MEDICINE) PART I EXAMINATION
JUNE, 1998

Date: 22nd June, 1998

Time : 2.00 - 4.00p.m.

PAPER I

Answer all questions.

1. The following table shows the results of a screening test applied to a population.

	Disease Present	Disease Absent	Total
Test Positive	30	300	330
Test Negative	10	2200	2210
	40	2500	2540

Calculate and discuss the implications of the following:

- (a) sensitivity (25 marks)
 - (b) specificity (25 marks)
 - (c) positive predictive value (25 marks)
 - (d) yield (25 marks)
2. Write notes on the following:
- (a) The randomisation process in a clinical trial (30 marks)
 - (b) How is randomisation achieved? (30 marks)
 - (c) Discuss the ethical issues in randomised clinical trials (40 marks)
3. Twenty five elderly insulin dependent patients with diabetes mellitus were studied to see if good control of diabetes is associated with a lower rate of complications. Among the 15 patients with good diabetic control, 20% were found to have diabetic complications compared to 70% with diabetic complications among those with poor diabetic control.

A statistical test of significance done on the difference between the two complication rates gave a one-tailed probability of 0.02. On the basis of these results, the investigators concluded that "good diabetes control can significantly reduce diabetic complications".

- a. Summarize the results of the study in a 2 X 2 contingency table. (25 marks)
- b. Which test of significance was probably used to test for the difference between the two complication rates? Give reasons. (25 marks)
- c. What is meant by "a one-tailed probability of 0.02"? - (25 marks)
- d. Comment on the statement that "good diabetic control can significantly reduce diabetic complications", in the context of this study. (25 marks)

4. Discuss the difference between parametric and non-parametric statistical methods. (40 marks)

Give one example to demonstrate the use of the following:

- | | |
|-----------------------------------|------------|
| Wilcoxon's Rank Sum Test | (20 marks) |
| χ^2 test for goodness of fit | (20 marks) |
| ANOVA | (20 marks) |

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE , 1998

Date: 23rd June, 1998

Time : 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

1. Write notes on,
 - 1.1 Incidence density (30 marks)
 - 1.2. Ecological bias (30 marks)
 - 1.3. Migrant studies (40 marks)

2. A researcher tested a procedure for removing house dust mites from the bedding of adult asthmatics in an attempt to improve subject's lung function, which was measured by PEFR. The trial was a two period cross over design, the control or placebo treatment being dust removal from the living room. The means and standard error for PEFR in 32 subjects are given below:

Study groups	Mean PEFR litres/minute	Standard Error litres/minute
Active treatment	335	19.6
Placebo treatment	329	20.8
Difference within subjects (treatment - placebo)	6.45	5.05

 - 2.1 Carry out an appropriate statistical procedure. (40 marks)
 - 2.2
 - 2.2. Comment on the results. (60 marks)

3. Outline the methods of dealing with confounding in epidemiological studies. (100marks)

4. The following data are from a study of the mortality experience of men who participated in the UK atmospheric nuclear weapons tests. Their mortality rates are compared with UK national rates and also with rates of matched controls. The controls were men who had been employed by the same institutions as the exposed men and had served in the same areas where the tests were carried out but had not participated in the weapons testing programme.

	Test Participants		Controls		Relative rate* (95% C.L.)
	SMR**	Observed Deaths	SMR**	Observed deaths	
All causes	80	1591	79	1607	1.01 (0.95-1.07)
All neoplasms	80	406	83	434	0.96 (0.86-1.08)
Lung cancer	65	119	81	156	0.82 (0.67-1.02)
Leukaemia	113	22	32	6	3.45 (1.56-8.37)

* Mortality in test participants relative to controls

** Age standardised SMR using UK national rates as standard

- 4.1. Comment on the findings (50 marks)
- 4.1. What further information would you require for interpretation of the findings? (50 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) PART I EXAMINATION
JUNE, 1999

Date :- 21st June, 1999

Time :- 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

1. A study was undertaken to compare the blood pressure of 2 communities A and B. Of those over 30 years of age, 500 persons from each community were selected by sampling. The names of all persons over 30 years of age were arranged in alphabetical order and every 5th person were selected for the study. The study was carried out by 8 field workers using their own sphygmomanometers. 100 persons in Community A and 50, in community B were non responders. 20% in community A and 15% in community B were hypertensive.
 - 1.1. What was the method of sampling used in this study? (10 marks)
 - 1.2. What are the errors that could occur in the study and how will you overcome them? (60 marks)
 - 1.3. What conclusions can you draw from the study ? (30 marks)
2. It has been hypothesised that exposure to toxic gases, following an industrial accident that occurred 2 years ago, could have an effect on fertility among women, living in that area.
Describe in detail how you would carry out a study to test this hypothesis. (100 marks)
3. Of a total of 7336 deliveries that took place during the period 1992 - 1993 in a Maternity Hospital, 554 pregnancies were identified as high risk pregnancies and "monitoring of foetal heart rate" was carried out. In the same hospital, 692 high risk pregnancies were identified out of a total 3186 deliveries that occurred in 1991. (Foetal heart rate monitoring was introduced in 1992).

	(Birth Weight (gmm))		Total
	< 2500	>*2500	
1992 - 1993	47	507	554
1991	111	581	692

	Apgar score at 1 minute			Total
	0	1 - 6	7 - 10	
1992 - 1993	0	40	505	545
1991	3	65	608	673

	Perinatal Mortality		Total
	Deaths	Survivors	
1992 - 1993	2	552	554
1991	12	680	692

- 3.1. What can you conclude about the relationship between monitoring and perinatal mortality? Do any statistical tests which seems necessary (70 marks).
- 3.2. What additional information would you like to have to help you in interpreting these data? (30 marks)
4. Write notes on -
- 4.2. Nested case control studies (30 marks)
- 4.2. Ecological bias (30 marks)
- 4.3. Migrant studies (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE , 1999

Date: 22nd June, 1999

Time: 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions

1. A doctor hypothesizes that men who abuse drugs are more likely to commit rape than men who are not drug abusers. He conducts a case-control study to test this hypothesis selecting cases from a random sample of men serving sentence for rape in state prison
 - (a) Are the cases representative of the population of all rapist/Give reasons for your answer. - (20 marks)
 - (b) Suggest a suitable control group for this study.- (20 marks)
 - (c) List potentially confounding variables and suggest method to control them. - (20 marks)
 - (d) What are the advantages and disadvantages of using a case - control study design to examine the relationship between rape and drug abuse. (20 marks)
 - (e) What is the out-come variable in this study? What difficulties might the investigator encounter - (20 marks)
in measuring this variable.

2. Two neurologist hypothesize that patients who receive physical therapy after cerebro-vascular accidents soon after the condition is stabilized experience a lesser degree of permanent impairment than those for whom physical therapy is delayed. Outline a randomized controlled clinical trial to test this hypothesis? (100 marks)

3. Write notes on,
 - (a) Standerdized mortality ratio. (30 marks)
 - (b) Sentinel Surveillance (30 marks)
 - (c) Fertility Indicators (40 marks)

4. To study the possible association between oral contraceptive use and the occurrence of rheumatoid arthritis (RA) an investigator selected 100 women confirmed diagnosis of RA and 200 women without RA. Results are given below.

	RA+	RA-	Total
Oral contraceptive use			
User	40	120	160
Non-user	60	80	140
Total	100	200	300

- (a) calculate and interpret the odds ratio. (20 marks)
- (b) can relative risk be directly calculated from the result of this study? give reasons to your answer. (20 marks)
- (c) calculate 95% confidence interval for the Odds ratio. (30 marks)
- (d) is there a statistically significant association between oral contraceptive use and occurrence of RA? (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) PART I EXAMINATION
NOVEMBER, 1999

Date: 15th November, 1999

Time: 2.00p.m.-4.00p.m.

PAPER I

Answer all four questions.

1. Discuss the usefulness and the limitations of routinely collected morbidity data in Sri Lanka for health planning. (70 marks)
Outline a plan for improvement of such data in a province. (30 marks)
2. Write notes on,
 - 2.1 McNemar's test (40 marks)
 - 2.2 Sampling using probability proportionate size technique (30 marks)
 - 2.3 Total Fertility Rate (TFR) (30 marks)
3. 50,000 persons were screened for diabetes mellitus in a community. Initially, the presence of glycosuria was tested using a dipstick method. The sensitivity and the specificity for the urine test were 90% and 80% respectively.
 - 3.1 Calculate the predictive values positive and negative for the urine test if the prevalence of diabetes mellitus in that community was 6 per 1000. (30 marks)
 - 3.2 If the prevalence of diabetes mellitus was 10 per 1000, what would be the predictive values be? (20 marks)
 - 3.3 Comment on the results obtained from 3.1 and 3.2 (25 marks)
 - 3.4 Discuss briefly the factors that affect the yield of a screening programme (25 marks)
4. A researcher wishes to test the hypothesis that low birth weight is associated with poor cognitive performance at school entry.
 - 4.1 Outline a study to test the above hypothesis. (50 marks)
 - 4.2 Give reasons for choosing the particular study design. (20 marks)
 - 4.3 What are the biases that may arise and how would you overcome them? (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART I EXAMINATION

NOVEMBER, 1999

Date: 15th November, 1999

Time: 9.30a.m.- 11.30a.m.

PAPER II

Answer all four questions.

1.

- 1.1 Define randomization. (10 marks)
- 1.2 Describe 3 situations in which clinical trial could be considered unethical. (30 marks)
- 1.3 Describe 3 differences between randomized clinical trials, and community trials. (30 marks)
- 1.4 List 3 situation in which it is preferred to conduct community trial rather than randomized clinical trial. (30 marks)

2.

- 2.1 Describe how you would assess validity of information obtained by interviewing? (30 marks)
- 2.2 Describe 3 situations where qualitative data complement quantitative data (30 marks)
- 2.3 Describe 2 methods of analyzing qualitative data and the limitations of these methods. (40 marks)

3. You have been asked to implement in your DDHS area a health education intervention program for adolescent girls on HIV/AIDS and reproductive tract infection.

- 3.1 Give details of the intervention study you would carry-out. (30 marks)
- 3.2 How would you monitor the process of the intervention? (30 marks)
- 3.3 How would you evaluate the effect of the intervention program at end of 2 years?
(Describe the sample size, indicators and how you would measure the indicators) (40 marks)

4. As the medical officer of a DDHS (MOH) area it has been brought to your notice that there has been an outbreak of gastroenteritis following a wedding reception.

- 4.1 Give details how you will investigate the epidemic (40 marks)
At the end of the investigation the following data is given to you

Food Item	Ate		Did not eat	
	No	ill	No	ill
Beef Rolls	150	75	50	25
Patty	100	60	100	30
Fish Sandwiches	150	120	50	10
Cutlet	140	60	60	20
Ice cream	160	120	40	25

- 4.2 What is the likely cause of the outbreak. Give reasons for your assumption. (25 marks)
- 4.3 What further investigations will you carry out at this stage? (20 marks)
- 4.4 What steps will you take to prevent similar outbreaks in the future? (15 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITYMEDICINE/COMMUNITY DENTISTRY)

PART I EXAMINATION

JUNE, 2000

Date : 20th June, 2000

Time: 2.30p.m.-4.30.p.m.

PAPER 1

Answer all four questions.

1. Explain giving examples when you would use the following statistical procedures.
 - 1.1. analysis of variance (30 marks)
 - 1.2. multiple linear regression (40 marks)
 - 1.3. paired 't' test (30 marks)

2. There has been an outbreak of measles in children under 5 years of age in area A. The measles immunisation coverage in the area is 72%.
 - 2.1 Design a study to test the efficacy of measles vaccination in this area. (60 marks)
 - 2.2 What confounders would you take into consideration in designing the study and how would you reduce the effects of these confounders. (40 marks)

3. Discuss sampling procedures you would use in following studies.
 - 3.1 assessing KAP on HIV/AIDS among commercial sex workers. (35 marks)
 - 3.2 determining prevalence of visual defects in the elderly living in a province. (35 marks)
 - 3.3 assessing mental health status in pre-school children in a district. (30 marks)

4. A screening programme for breast cancer was carried out in a population of 100,000 women in which the prevalence of breast cancer was known to be 0.5% from an earlier estimate. The sensitivity of the screening test was 80% and the screening yielded 1395 women as having breast cancer.
 - 4.1 Do the necessary calculations and discuss the properties of the screening test including ethical issues. (60 marks)
 - 4.2 Explain: the steps you would take to increase the predictive value positive (PV+) of this screening programme. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
JUNE, 2000

Date: 21st June, 2000

Time: 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

1.
 - 1.1 What is random error ?
How can it be reduced ? (20 marks)
 - 1.2 Discuss the common sources of systematic error in epidemiological studies and how they may be reduced. (80 marks)
2. Table 1 shows the relationship of exposure to asbestos and smoking, with lung cancer.
 - 2.1 Calculate all possible measures of effect (40 marks)
 - 2.2 Discuss the results (60 marks)

Table 1 : Age standardized lung cancer death rate rate per 100,000 population in relation to cigarette smoking and exposure to asbestos dust.

Exposure to Asbestos	History of cigarette Smoking	Lung Cancer death rate per 100,000 population
Yes	No	71
No	No	58
No	Yes	123
Yes	Yes	602

3. A clinician notes that the local application of drug 'A' results in faster healing of diabetic foot ulcers compared to the usual practice of hypertonic saline dressings.

3.1 Outline a study to test the above observation (60 marks)

Discuss the biases that may arise and the steps you would take to overcome them. (40 marks)

4.

4.1 Figures 1 and 2 refer to prostate cancer data from the USA.

4.1.1 Comment on the data (20 marks)

4.1.2 Discuss possible explanations for what is observed (30 marks)

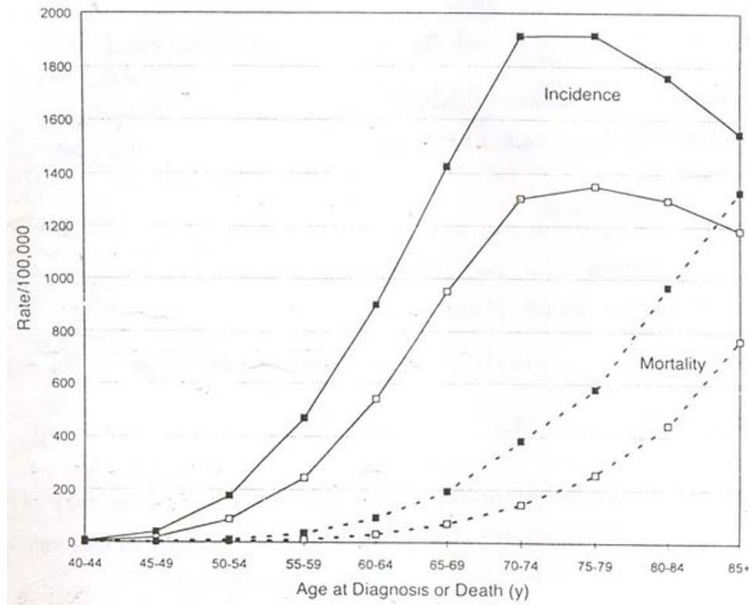


Fig . 1 - Age - race specific incidence and mortality for prostate cancer USA 1995.

Solid square - Black American

Open square - White American

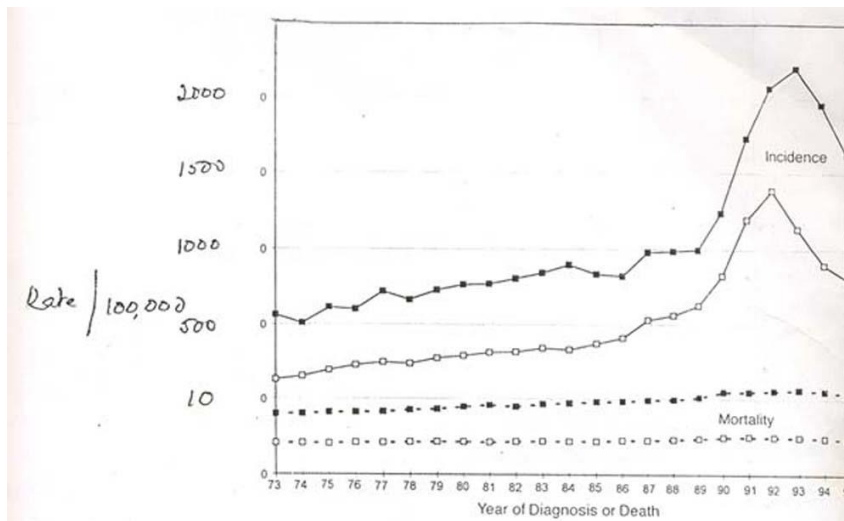


Fig.2 - Time trends in the incidence and mortality for prostate cancer by race USA 1973 - 1995

Solid square - Black American
 Open square - White American

4.2 Figure 3 and Table 2 examine the relationship between alcohol consumption and CHD mortality

Figure 3 - Relationship between per capita alcohol consumption and CHD death rates of different countries.

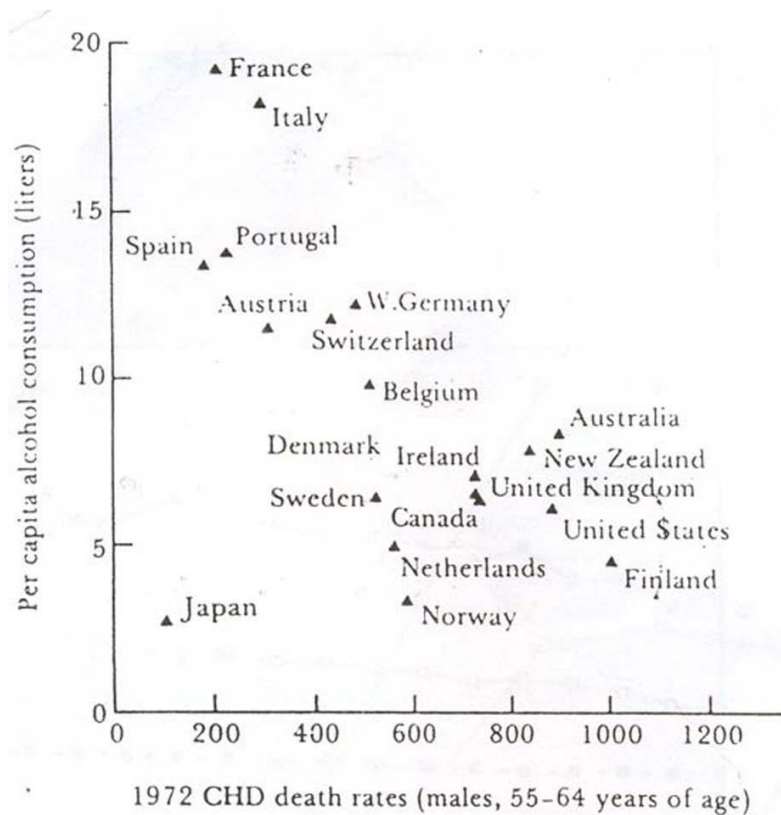


Table 2 - Dose response relationship of alcohol intake with CHD mortality from the Chicago Western Electric Company Study.

Average daily consumption Of alcohol No. of drinks	Age-adjusted CHD mortality rate/1000
1	80
1	77
2 - 3	73
4 - 5	55
6	155

4.2.1 Comment on the data in figure 3 & Table 2. (20 marks)

4.2.2 Discuss the observations (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO
MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
JANUARY, 2001

Date : 22nd January, 2001

Time: 2.30 - 4.30

PAPER I

Answer all four questions.

1. In a case control study of risk factor of Myocardial Infarction (MI). 100 cases and 100 controls were asked for their smoking habits and alcohol consumption. The information obtained is given below.

	<u>Alcohol consumption +</u>	<u>Smoking +</u>
With MI	71	70
Without MI	52	50

- 1.1 Calculate the relevant estimate of risk of MI with consumption of Alcohol. Write your conclusions. (40 marks)
- 1.2 Show how the estimate you obtained in 1.1 for those with consumption with alcohol is affected by smoking status, if
- among 30 non-smoking patients with MI 8 consumed alcohol as opposed to, 16 of 60 non-smoking controls and
-among 70 smokers with MI, 63 consumed alcohol supposed to 36 of 40 Controls Who were smokers.
- Write your conclusions. (40 marks)
- 1.3 List the methods you would use to overcome the above problem in case control studies. (20 marks)
2. The Ministry of Health has decided to introduce a new vaccine, Measles & Rubella (MR) at 3 years of age to the immunization schedule from 1.4.2001.
- 2.1 What information would you look at to justify the above decision? (60 marks)
- 2.2 Discuss the information you would use to monitor the effectiveness of the vaccine introduced. (40 marks)

3. Indoor morbidity data for peptic ulcers for two periods of time are given below:

The annual admission rates per 100,000 population
Aged 15 years and over for peptic ulceration.

Year	Non perforated ulcer				Perforated ulcer			
	Duodenal ulcer		Gastric ulcer		Duodenal ulcer		Gastric ulcer	
	M	F	M	F	M	F	M	F
1978-80	153.0	41.9	93.8	48.9	29.4	4.41	12.1	3.02
1990-92	131.0	34.1	52.7	32.5	22.1	4.03	5.3	2.59

3.1 Comment on the data (30 marks)

3.2 What factors may have been responsible for the change observed ? (50 marks)

3.3 What are the limitations of these data as a guide to change in incidence rates of peptic ulcer.? (20 marks)

4. Discuss the usefulness and limitations of the following,

4.1 Perinatal Mortality Rate (30 marks)

4.2 Proportional Mortality Ratio (30 marks)

4.3 Key informant interviews (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART 1 EXAMINATION

JANUARY, 2001

Date: 23rd January, 2001

Time: 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

1. Comment on the following

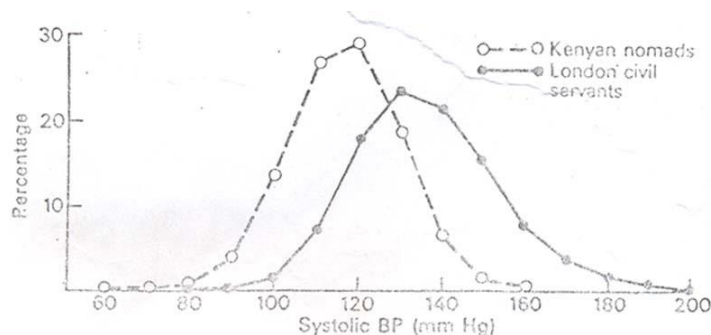
1.1 The strongest international correlates of mean blood pressure is salt intake. A study of 3568 randomly selected persons from several countries and ethnic groups reported a very low correlation between salt intake and blood pressure (20 marks)

1.2 A cross sectional population survey of varicose veins yielded the following results.

Age group (years)	Percentage prevalence	
	Male	Female
10 -	0.5	1.0
20 -	3	5
30 -	12	18
40 -	26	21
50 -	30	26
60 -	18	21
70 +	10	8

(40 marks)

1.3 Figure 1.3 - Distribution of systolic blood pressure in a population of Kenya nomads and British Civil Servants. Men aged 40-59 yrs.



(40 marks)

2. Outline a study to test the hypothesis that waist circumference is a better predictor of hypertension than BMI in adult females paying special attention to issues in study design & data analysis.
(100 marks)

3. In a clinical trial to assess the effects of a new treatment for cancer of the oesophagus, 100 patients were given the standard treatment, 12 were alive at the end of 3 years and 11 were alive at the end of 5 years. Of 47 patients who were given the new treatment, 12 and 2 patients were surviving at the end of 3 years and 5 years respectively.
 - 3.1 Is there statistical evidence that the new treatment is better than the standard treatment ?
(40 marks)

 - 3.2 How would you critically evaluate the above statistical findings to draw conclusions regarding management of patients with oesophageal carcinoma.
(60 marks)

4. Write notes on:
 - 4.1 Standardization
(30 marks)
 - 4.2 Kappa Coefficient
(30 marks)
 - 4.3 Selection bias
(40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
JULY, 2001

Date: 4th July, 2001

Time: 2.30 p.m. to 4.30 p.m.

PAPER I

Answer all four questions.

1. The renal-hypertensives clinic in a hospital has been requested to cut down the cost of laboratory investigations and the urine test – N - acetyl B – D - glucosamidinidase (NAG) is used for this purpose. This test is claimed to be cheap, convenient, and a simple guide to the need for further investigations in hypertensives.

In 137 hypertensive subjects of whom 53 had renal disease 44 had increased levels of NAG in urine. Among the total subjects 67 showed a similar result.

The consultant refers the data given above to you as the Epidemiologist.

1. What advice would you give regarding the utility of this test ?
(60 marks)
2. What further data would you require to give a complete answer ?
(40 marks)
2. What are the errors that can arise in using a questionnaire as a study instrument ?
What are the things you would do to minimize variation in data collected ?
 1. During construction of the questionnaire. (50 marks)
 2. During administration of the questionnaire. (50 marks)
3. Write notes on :
 1. ANOVA (20 marks)
 2. Limitations of cross over trials (40 marks)
 3. Mantel Haenszel odds ratio (40 marks)

4. There is concern that the incidence of cancer is increasing in our country. The only morbidity data available are those published by the Cancer Control Programme, Maharagama which are given below.

Comment on the above statement

(100 marks).

Table 1: New cases of cancer by age, reported by the Cancer Control Programme, Maharagama and the population for the years 1985 and 1995.

Age group in years	1985		1995	
	Population ('000)	New cases of cancer	Population ('000)	New cases of cancer
<5	1951	75	1322	28
5 - 9	1775	69	1471	25
10 - 14	1775	67	1641	42
15 - 19	1688	72	1478	85
20 - 24	1586	104	1316	120
25 - 29	1338	116	1228	140
30 - 34	1180	165	1255	209
35 - 39	882	264	1109	333
40 - 44	734	364	993	491
45 - 49	640	485	827	695
50 - 54	570	627	626	809
55 - 59	444	711	491	746
60 - 64	359	608	427	888
65 - 69	269	551	330	853
70 - 74	190	383	243	615
>=75	218	351	258	518
Total	15599	5012	15021	16597

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
JULY, 2001

Date: 6th July, 2001

Time: 9.30 a.m. to 11.30 a.m.

PAPER II

Answer all four questions.

1. As the Director of Health Services of a Province, plan an intervention to improve the quality of mortality and morbidity data in your area (100 marks).
2. The following data were obtained during a cross sectional population survey of a district

Table 1: Distribution of diabetics and. non diabetics by level of physical Activity.

Level of activity	Diabetics	Normal	Total
Sedentary	51	530	581
Moderately active	150	1553	1703
Active	112	785	897
Total	313	2868	3181

Comment on the findings (100 marks).

3. 3.1 It is suggested that blood donors be given the option of requesting for their HIV status. Would you agree with this recommendation ? Explain your reasons (50 marks).
- 3.2 "Stigma" is a public health problem. Taking any disease as an example discuss measures that you would advocate to reduce stigma (50 marks).
4. Treated bed nets are advocated in the control of malaria. Plan a study to determine the effectiveness / impact of this measure (100 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE) PART 1 EXAMINATION
FEBRUARY, 2002

Date:- 5th February, 2002

Time :- 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

1. A case-control study to evaluate the risk factors for hip fractures among patients aged 65 years or older was conducted. The use of psychotropic drugs and presence of mental confusion as possible risk factors were examined. 139 cases and 234 controls were included. The following results were obtained :-

Psychotropic drug	Mental Confusion	Cases	Controls	Odds ratio
No	No	40	135	1.0
Yes	No	42	64	2.23
No	Yes	21	21	3.38
Yes	Yes	36	14	8.68

- 1.1. Outline the advantages of a case-control design to examine the risk factors for hip fractures (60 marks)
- 1.2. Interpret the results of the table presented above. (40 marks)
2. You wish to determine the ethnic differences in the prevalence of myopia in a population of 2000 school children aged 7 years, and having the following distribution: 80% sinhala, 12% tamil and 8% others.
- 2.1. How would you select a sample of 900 subjects to determine the prevalence of myopia in each ethnic group ? (60 marks)
- 2.2. How would you summarise the overall prevalence of myopia ? (60 marks)

3. Table 1 shows the age specific fertility rates reported from four different studies.

Table 1 : Age specific fertility rates (Births per 1000 women)

Age group	1974 - 75	1082-87	1988 - 93	1995 - 2000
15 – 19	31	38	35	14
20 – 24	146	147	110	72
25 – 29	161	161	134	123
30 – 34	158	122	104	105
35 – 39	126	71	54	58
40 – 44	43	23	14	18
45 – 49	6	3	4	2
TFR	3.4	2.8	2.3	2.0

Source :

1974 – 75	-	World Fertility Survey
1982 – 87	-	Demographic and Health Survey 1987
1988 – 93	-	Demographic and Health Survey 1993
1995 – 00	-	Demographic and Health Survey 2000

- 3.1. Comment on the fertility decline seen in the above table (50 marks)
- 3.2. **Briefly** discuss other information that would be needed to examine probable causes of the decline, observed. (50 marks)
4. It is reported that low birth weight is a risk factor for the development of gestational diabetes. Outline the design of a study to test the above hypothesis. Discuss the reasons for your choice of the design and the probable biases that may occur. (100 marks)

(It is known that 20 - 25% of all births in Sri Lanka take place at De Soysa Maternity Hospital and Castle Street Hospital for Women and records of deliveries are available from 1956 onwards).

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE) PART 1 EXAMINATION
FEBRUARY, 2002

Date :- 6th February, 2002

Time :- 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

1.
 - 1.1. Discuss the criteria of suitability of a disease for screening. (50 marks)
 - 1.2. Discuss the various issues that must be considered in the implementation of a screening programme (50 marks)
2.
 - 2.1 In stratified analysis compare and contrast the evaluation of confounding and effect modification. (50 marks)
 - 2.2 What are the chief strengths and limitations of multivariate analysis (50 marks)
3. Outline the epidemiological approaches that may be used to test the hypothesis that Hepatitis C infection may be a cause of liver cancer (100 marks)
4.
 - 4.1. The following mortality data was recorded for two occupational groups A and B during a given year.

	Group A	Group B
Observed deaths	100	1050
Expected deaths (when national rates were applied)	125	1000

Compare the mortality in the two occupational groups (50 marks)
 - 4.2. The mean diastolic blood pressure in a random sample of 64 adult males drawn from a population of 1000 adult males was 80 mmHg with a standard deviation of 12mmHg. Calculate the 95% confidence interval for the mean diastolic blood pressure for the adult population. (50 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
JULY, 2002

Date: 8th July, 2002

Time: 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four questions.

1. You have been asked to evaluate a new "technique" for assessment of blood sugar concentration.
 - 1.1. Design a study to investigate the influence of subjects, techniques and observers. (60 marks)
 - 1.2. State the form of analysis you would use. (40 marks)

2. Discuss the usefulness of the following approaches in epidemiological research.
 - 2.1 Migrant studies (50 marks)
 - 2.2 Birth cohort analysis (50 marks)

3. In a hospital based case control study to assess the relationship between heumatoid arthritis and oral contraceptives use, the cases were random sample of 100 women with rheumatoid arthritis undergoing treatment at one of the five rheumatology clinics in the Out Patient Department.
 - 3.1 Suggest an appropriate control group for the study. Give reasons for your choice. (30 marks)
 - 3.2 Describe the potential sources of bias that may compromise the conclusions of the study. (30 marks)
 - 3.3 How would you minimize three of the identified biases. (40 marks)

4. Write notes on the following:
 - 4.1 Usefulness of Receiver Operator Characteristic (ROC) curve (35 marks)
 - 4.2 Standardized Mortality Ratio (SMR) (35 marks)
 - 4.3 B error of 0.02 (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART 1 EXAMINATION

JULY, 2002

Date: 9th July, 2002

Time: 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

- 1 Write short notes on :
 - 1.1 Blocked randomization (30 marks)
 - 1.2 Volunteers in research (35 marks)
 - 1.3 Non-compliance in clinical trials (35 marks)

2. Explain the situations in which the following statistical tests could be applied.
Give an example for each situation.
 - 2.1 Correlation coefficient (30 marks)
 - 2.2 Mental - Haenzel odds ratio (OR) (35 marks)
 - 2.3 Analysis of variance (35 marks)

3. Describe the situations in which the following data collection procedures are used, giving reasons.
 - 3.1 Focus group discussions (35 marks)
 - 3.2 Life histories (35 marks)
 - 3.3 Key informant interviews (30 marks)

4. You have been requested to carry out a research project to find out the prevalence of obesity in urban children between 10-19 years of age in Sri Lanka.
 - 4.1 Describe the sampling procedure you would use giving reasons. (60 marks)
 - 4.2 How would the sampling affect the estimates (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
AUGUST, 2003

Date: 4th August, 2003

Time: 1.30 p.m. - 3.30 p.m.

PAPER 1

Answer all four questions.
Answer each part in a separate book

PART A

- Q1. Doctors practising in village X, attribute asthma in their area to air pollution due to emissions from a sugar manufacturing plant. Outline the design of a study to examine this association (100 marks)
- Q2. A study reported in the Journal of Public Health Medicine (vol. 25, no.1 pp 59-61) investigated the relative effectiveness of four strategies in detecting and preventing tuberculosis in a given community. The four methods examined were, contact tracing of smear positive pulmonary disease, smear negative pulmonary disease, non pulmonary tuberculosis and population screening of new immigrants from high incidence countries. The findings of the study are given in table 2

Table 2 : Results of contact tracing according to category of the incidence case and result of screening new immigrants.

Category	Number of Index cases	Number of Contacts traced	Number of Active cases of TB	Total no. of Cases detected
Contacts of Smear positive pulmonary TB	66	263	13	33
Smear negative pulmonary TB	78	156	3	12
Non pulmonary TB	83	227	2	14
New immigrants	-	322	0	10

- 2.1 Comment on the effectiveness of the different strategies in control of tuberculosis in this community. (100 marks)

PART B

Q3 Discuss briefly

- 3.1 Behavioural surveillance in relation to HIV/AIDS. (50 marks)
- 3.2 Analysis and reporting of qualitative data. (50 marks)

Q4 Write notes on

- 4.1 Interim (sequential) analysis (25 marks)
- 4.2 P value in multiple comparison (25 marks)
- 4.3 Ecological bias (25 marks)
- 4.4 Disability Adjusted Life Years (DALY) (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART 1 EXAMINATION

AUGUST, 2003

Date : 5th August, 2003

Time: 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

Answer each part in a separate book

PART A

- Q1. Discuss the usefulness and limitation of using routinely available information in the assessment of morbidity and mortality due to neoplasms in Sri Lanka.
(100 marks)
- Q 2. The Wright Peak Flow Meter and the Mini Flow Meter are two instruments used to measure Peak Expiratory Flow Rate in patients. A physician was interested in finding out how well the Mini Peak Flow Meter performs in comparison to the Wright Peak Flow Meter in measuring the peak flow rates in patients. Table 1 gives the findings of an experiment conducted for this purpose.

Table 1: Comparison of Peak Expiratory Flow Rate (PEFR) (litres / min) measured by Wright meter and mini meter in 12 female subjects

Subject no.	Wright PEFR litres /min	Mini PEFR litres / min
1	490	525
2	397	415
3	512	508
4	401	444
5	470	500
6	415	460
7	431	390
8	429	432
9	420	420
10	275	227
11	165	268
12	421	443

- 2.1 Carry out any calculations necessary and **comment on the performance** of the Mini Peak Flow Meter in comparison to the Wright Peak Flow Meter.
(The steps in calculations have to be clear) (60 marks)
- 2.2 Discuss what measures you would take to ensure quality of data in the above experiment. (40 marks)

PART B

Q3 The true incidence rates of Coronary Heart Disease (CHD) among persons who consume alcohol is 50.0 per 100,000 person years and who do not consume alcohol is 10 per 100,000 person years.

- 3.1 Calculate the true rate ratio (20 marks)

Suppose a study was conducted over a 1 year period to determine the association between alcohol consumption and CHD using a self administered questionnaire among 1,500,000 persons of whom 1,000,000 actually consumed alcohol and the remainder were teetotalers. Also, suppose that in the study one half of the alcohol consumers were classed as teetotalers and that one third of the teetotalers were classed as alcohol consumers.

- 3.2 Calculate the ratio for the study (40 marks)

- 3.3 What is the reason for the discrepancy of estimates in parts (a) and (b). (10 marks)

- 3.4 Briefly describe the steps you would take to minimize this discrepancy. (30 marks)

Q4 Discuss giving examples:

- 4: 1 . Selection of controls in case control studies. (50 marks)

- 4.2 Ethical considerations in a survey of adolescent reproductive health. (50 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART 1 EXAMINATION

JULY, 2004

Date:- 27th July, 2004

Time- 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions

Answer each question in a separate book.

Q1.

- 1.1 What are the possible disadvantages of using structured response questions when the researcher is unsure as to what answers respondents may want to (30 marks)
- 1.2 When are structured questions best used ? (10 marks)
- 1.3 Describe how a researcher can avoid bias in designing a questionnaire (60 marks)

Q2.

In study of aetiology of carcinoma of the lung investigators found 1350 persons who out of 1357 who had lung cancer, and 1296 smoked out of 1357 who did not cancer sampled from the community.

- 2.1 What is the risk of lung cancer ? (40 marks)
- 2.2. What proportion of lung cancer can be prevented by eliminating smoking from population ? (40 marks)
- 2.3. Discuss whether Odds Ratio is a valid estimate of Relative Risk. (20 marks)

Q3.

- 3.1. Describe how you would evaluate an ongoing cervical cancer screening program. (50 marks)
- 3.2. Describe a study design to assess the effectiveness of this programme in reducing mortality due to carcinoma cervix (50 marks)

Q4. This question is based on a survey published in an Australian newspaper. Such survey is not represent reserach published in scientific journals. The survey questioned a sample adults concerning their smoking habits. I

	<u>Survey characteristics</u>
Sample	1000 voters
Coverage	Australia wide
Method	Telephone
Question	Do you smoke ? Yes or No
	Results

Smoking	Percentage of replies to the questions in the two cities	
	Melbourne	Sydney
Yes	24	18
No	76	82

- 4.1 If we assume that cigarette smoking is a 'stigmatised' behaviour, do you think the telephone survey produced valid answers ? (15 marks)
- 4.2 180 people were interviewed in Melbourne and 220 in Sydney. If the population of Australia is 17 million and the populations of Melbourne and Sydney are 2.5 and 3.2 million respectively. Comment on the proportions. (25 marks)
- 4.3 Which categories of smokers may not have been reached by this survey and what implications might this have for external validity of the survey ? (20 marks)
- 4.4 A journalist commented on the results saying ' This difference is ironic given that anti-smoking lobbyist have applauded Melbourne as a pacesetter for smoking law reform, such as tobacco tax-funded health promotion' Explain why this comment is inappropriate given the design of the survey? (15 marks)
- 4.5 Which statistical test should be used to analyse the significance of the results concerning the difference in smoking between the two cities ? Justify your selection. (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO
MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
JULY, 2004

Date:- 28th July, 2004

Time :- 9.30 a.m. - 11.30 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1. HIV serology was carried out among transport workers coming for their annual renewal of license using a single Elisa test. Informed consent was not obtained. The testing was done in an unlinked anonymous fashion. Information was gathered from January 1st 2002 to December 31st 2002. The table below shows the frequency among workers who used four wheelers (group 1) and two wheelers (group 2).

Group	No. tested	No.+ve
1	2400	60
2	600	24

- 1.1. Name the study design. (10 marks)
- 1.2. Is the study ethically correct ? (20 marks)
- 1.3. What parameter was being measured, incidence or prevalence? (10 marks)
- 1.4. Is there a statistically significant difference between the two groups? (30 marks)
- 1.5. The ELISA test has a sensitivity of 99% and specificity of 98%.
How does this fact affect the study results ? (30 marks)
2. Write notes on
- 2.1. Usefulness of proportional mortality ratio (30 marks)
- 2.2. Methods of studying vaccine efficacy (35 marks)
- 2.3. Usefulness and limitations of International Classification of Diseases (35 marks)

- 3 Outline the methodology of a study you would design to test the hypothesis that middle aged Middle East returnees have an increased risk of developing diabetes. (100 marks)
4. In a trial of BCG vaccination of children against Leprosy in a district, the child contacts of cases of Leprosy who were Tuberculin negative were randomly allocated to i.) BCG vaccinated group and ii) unvaccinated group. At the first follow up 2 years later, the number of cases of Leprosy discovered in the study groups is given in the Table.

Age in years at intake	Unvaccinated group			Vaccinated group		
	Total children	Cases No.	% cases of leprosy	Total children	Cases No.	% cases of leprosy
0-	1366	1	0.07	1306	0	0
2	1588	7	0.44	1518	2	0.13
4	1623	19	1.17	1654	2	0.12
6	1251	17	1.36	1274	6	0.47
8	870	20	2.30	921	3	0.33
10- 12	561	10	1.78	587	1	0.17
	7259	74	1.02	7260	14	0.19

- 4.1 Why were children who were 'case contacts' only, included in the study ? (25 marks)
- 4.2. What precautions would you want to incorporate in the initial examination and allocation to vaccinated and unvaccinated groups ? (25 marks)
- 4.3. What precautions would be necessary at the time of follow up ? (25 marks)
- 4.4. What conclusions can you draw on the efficacy of BCG vaccination against leprosy? (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO
MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
AUGUST, 2005

Date :- 4th August, 2005

Time :- 1.30 p.m. - 3.30 p.m.

PAPER 1

Answer all four questions.

Answer each question in a separate book.

1. A sample of new born babies chosen using a simple random sampling technique from an entire district provided the following information.
Sample size 100
Mean birth weight 3 kg
Standard deviation 500 gm
 - 1.1. What is the coefficient of variation ? (20 marks)
 - 1.2. Had the sample size been 400 what would have happened to SD (10 marks)
 - (a) larger
 - (b) smaller
 - (c) same
 - 1.3. Is there any thing in the above data that suggests that the distribution of birth weight is unlikely to be non non normal (10 marks)
 - 1.4. Assuming that the distribution of birth weight is normal. What proportion of newborns would have weights,
 - 1.4.1. > 3kg (10 marks)
 - 1.4.2. less than 2.5 kg (10 marks)
 - 1.4.3. less than 2kg (10 marks)
 - 1.5. Calculate 95% confidence interval (sample size 100). (15 marks)
 - 1.6. Answer in one sentence, what the above interval means. (15 marks)

2. Discuss the biases that may occur in the evaluation of a screening test.
(100 marks)
- "
3. Describe briefly the steps you would follow in planning and conducting a study to assess the prevalence of hypertension in a district of Sri Lanka.
(100 marks)
4. Discuss the usefulness and limitations of :
 - Ecologic studies (40 marks)
 - Non parametric tests (30 marks)
 - Nested case control studies (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
AUGUST, 2005

Date :- 5th August, 2005

Time :- 9.30 a.m. - 11.30 a.m.

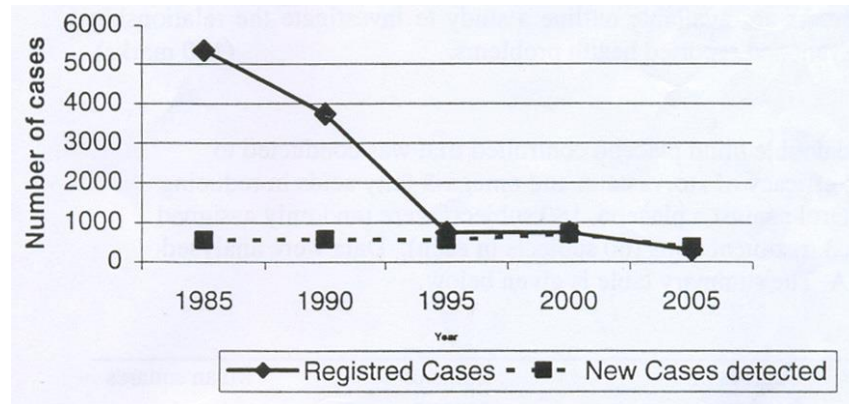
PAPER II

Answer all four questions.

Answer each question in a separate book.

1. The figure shows the number of cases of leprosy registered (prevalence) and new cases detected from 1985 to 2005.

Figure....Number of cases of Leprosy - Global in thousands by year



- 1.1. Describe the graph. (10 marks)
- 1.2. What are the reasons for the dramatic fall in registered cases ? (25 marks)
- 1.3. Why have the new case detection not shown a similar fall ? (15 marks)

Based on this decrease, WHO aims to eliminate leprosy globally by 2005 and changed the national programme from a "vertical" programme to an "integrated" programme.

- 1.4. List the advantages and disadvantages of an "integrated" national programme compared to a "vertical" programme? (25 marks)
- 1.5. What steps would you take to ensure that there is no resurgence of Leprosy in the future ? (25 marks)

- 2. A traffic accident that occurred in a town in the Kurunegala District involving a tanker lorry containing chemical waste led to the spillage of a large quantity of noxious gases. A plume of gas was observed for several hours. .

Since the accident, the local haematologist has reported an apparent increase in bleeding disorders among local residents. Assuming that baseline data on bleeding disorders are available outline a study to investigate the relationship between the event and reported health problems. (100 marks)

- 3. A randomized double blind placebo controlled trial was conducted to determine the efficacy of atorvastatin and omega-3 fatty acids in reducing serum cholesterol against a placebo. 180 subjects were randomly assigned equally to the 3 treatment arms (60 subjects in each). Data were analysed using ANOV A. The summary table is given below.

Source of Variation	Degrees of freedom	Sums of squares	Mean squares
Between	a	d	e
Within	b	9800	f
Total	c	10800	

- 3.1. Calculate the values of a, b, c, d, e and f in the above table. (30 marks)
- 3.2. Describe briefly any further analyses that may be required. (10 marks)

Suppose the investigator wanted to determine the effect of the treatment controlling for two age groups (<60 years and ≥60 years)

- 3.3. Write the sources of variation and degrees of freedom for each source of variation. (30 marks)

- 3.4. How would you determine if there is an age effect? Discuss giving formula (no calculations needed). (10 marks)
- 3.5. State reasons why ANOVA was used for this analysis. (20 marks)
4. Write notes on the following
- 4.1. Principles of choosing a sample size (50 marks)
- 4.2. Controlling confounding (30 marks)
- 4.3. Informed consent (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
AUGUST, 2006

Date :- 14th August, 2006

Time :- 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. A team of health care planners wishes to estimate the prevalence of Sexually Transmitted Infections in a particular community.
 - 1.1. Name the research design most appropriate to achieving this objective. (10 marks)
 - 1.2. Define the study population. (15 marks)
 - 1.3. What sampling method will you use and give reasons. (20 marks)
 - 1.4. Outline the methods that may be used to collect data and their problems. (30 marks)
 - 1.5. List the ethical issues. (25 marks)

2. A regimen of drugs including injectable preparations named ECF improves survival among patients with gastric adenocarcinoma. A study needs to be done to assess whether the addition of a peri-operative regimen of ECF to surgery improves survival.

250 patients are required in each group of patients (with and without peri-operative ECF) to detect an improvement in median survival of 12 months with a one-sided p-value of 0.05 and power of 90%..

 - 2.1. Explain the following :
 - 2.1.1 Improvement of median survival of 12 months. (10 marks)
 - 2.1.2 One-sided p-value of 0.05. (10 marks)
 - 2.1.3 A power of 90%. (10 marks)

 - 2.2. Explain the difference between clinical and statistical significance. (10 marks)

- 2.3. Can this study be conducted as a double blind study ?
Give reasons for your answer. (10 marks)
- 2.4. Design a suitable study to achieve the stated objectives. (50 marks)
- 3.
- 3.1. List the qualities of a good screening test. (20 marks)
- 3.2. How will you test the reliability of a screening test. (10 marks)
- 3.3. What is the Receiver Operative Characteristics (ROC) curve and its use. (20 marks)
- 3.4. A multistage screening was carried out in a population of 5000 industrial workers to determine those with HIV.
- The first screening test (test A) has a sensitivity of 98% and specificity of 80%.
- The second stage screening test (Test B) has a sensitivity of 90% and specificity of 96%.
- 3.4.1 What is the sensitivity and specificity of the combined test, if the prevalence of HIV is 2%. (25 marks)
- 3.4.2 Has the combined test made a difference in the yield of the cases ? -If so how ? (25 marks)
4. Write notes on the usefulness of the following to a health manager.
- 4.1. Cost effectiveness of an intervention. (30 marks)
- 4.2. Burden of disease estimates. (35 marks)
- 4.3. Focus group discussions. (35 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD(COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART 1 EXAMINATION
AUGUST, 2006

Date :- 15th August, 2006

Time :- 9.00 a.m. – 11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1. According to the data from a regional Cancer Registry, 80 of the 120 cases of oropharyngeal cancer were betel chewers. A random sample of 200 subjects selected from that region showed that 40/0 were betel chewers.
 - 1.1 Calculate the relevant measure of association between betel chewing and oropharyngeal cancer. (20 marks)
 - 1.2 Explain in one sentence what the above measure means. (10 marks)
 - 1.3
 - 1.4 Calculate the 95/0 Confidence Interval. (20 marks)
 - 1.5
 - 1.4 What does the above interval mean ? (10 marks)
 - 1.5 Calculate the population attributable risk. (25 marks)
 - 1.6 Explain the meaning of the value calculated under 1.5. (15 marks)

2. You are asked to review an article written on a community based trial to study the protective effect of HiB vaccine on meningitis in children under 2 years of age.

What are the methodological issues you would focus on when reviewing the above article ? (100 marks)

3. Write notes on
 - 3.1 Block randomization. (25 marks)
 - 3.2 In-depth interviews. (25 marks)
 - 3.3 Single blinding. (25 marks)
 - 3.4 Verbal autopsy. (25marks)

4. A psychiatrist hypothesizes that men who abuse drugs are more likely to commit rape than men who are not drug abusers. She conducts a case control study to test this hypothesis, selecting as cases a random sample of men serving sentences for rape in the state prisons.

4.1. Comment on the choice of cases. (20 marks)

4.2. Suggest a suitable control group for this study. (20 marks)

4.3. List potentially confounding variables and suggest methods to control them. (20 marks)

4.4. What are the advantages and disadvantages of using this study design to examine the above relationship. (40 marks)

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POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)
PART I EXAMINATION
AUGUST. 2007

Date: 13th August, 2007

Time: 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.
Answer each question in a separate book.

- 1.
- 1.1 The following table is from a study of age at menarche in our country using recall. The subjects were selected using simple random sampling.

Table1.1: Frequency distribution of age at menarche by current age group

Age of menarche	Current age of women	
	31-40 years	21-30 years
10	0	3
11	2	11
12	8	28
13	14	23
14	27	12
15	5	1
16	8	0
17	1	0
18	1	0
Total number	66	78
Mean	13.88	12.42
SD	1.387	1.075

Carry out necessary calculations and comment on the findings. (50 marks)

Please note Part II (1.2) of question 1 on page 2.

- 1.2 The table below shows the relationship between age of onset of asthma in children and maternal age at birth of the child. The children were all born in a given week.

Table 1.2 : Age of onset of asthma by mother's age at birth of child

Asthma reported	Mother's age at birth of child		
	15-19 years	20-29 years	30 + years
Never	261	402	215
Asthma +	150	134	73

Comment on the findings (carry out necessary calculations)
(30 marks)

What other possible explanations are there for the findings
(20 marks)

2.

2.1 The table below is from a study on induced abortion. Some women attended abortion services provided by a non-governmental organisation while others obtained services from a practitioner in the community. Of particular interest is a comparison of the incidence of complications among the two groups of women.

Table 2.1 : Distribution of cases of abortion and complications by abortion provider

Abortion provider	Cases & complications	Period of gestation at abortion			Total
		<9 weeks	9-12 weeks	>12 weeks	
NGO	Number of abortions	889	2851	682	4422
	Complications	21	89	28	138
Practitioner in community	Number of abortions	608	868	207	1683
	Complications	20	11	5	36

2.1.1 Briefly describe the findings of the study (20 marks)

2.1.2 Calculate a summary index for the comparison of the incidence of complications between the two groups of abortion providers and comment on the findings (20 marks)

2.1.3 Give the reasons for your choice of method in calculating summary index. (10 marks)

2.2 A population based screening programme was introduced in area X in 1996. All women aged 35-54 years were invited for cervical smear every 3 years. Over the period 1st January 1996 - 31 st December 2005, 68149 women had one cervical smear taken, 36002 had two smears and 7542 women had three smears. The table below shows the results relating to severe epithelial abnormalities (consistent with severe dysplasia, carcinoma in situ or invasive cervical cancer) diagnosed during the first, second and third cytological examinations.

Table 2.2 Epithelial abnormalities detected at screening

Rank of cytological examination	Number of women	Number with severe abnormalities	Rate per 1000 women screened
First	68149	219	3.2
Second	36022	42	1.2
Third	7542	7	0.9

Based on these findings it was concluded that "the population screening program has been successful "

Comment on this statement. (50 marks)

3. The following data are from a hospital based case control study of ovarian cancer. One of the exposures examined was oral contraceptive use. Cases and controls were not matched, although it was ensured that the age distribution of cases and controls were similar.

235 cases and 451 controls were selected for study. There were 35 women who had ever used oral contraceptives among the cases and 114 among the controls. The women were divided into 3 social class groups based on the husband's occupation. The distribution of cases and controls stratified by social class groups and oral contraceptive use is given below.

Table 3: Cases and controls stratified by social class groups

Highest social class group

	OC ever use	OC never use	Total
Cases	19	77	96
Controls	40	101	141
	59	178	237

Intermediate social class group

	OC ever use	OC never use	Total
Cases	14	98	112
Controls	59	158	217
	73	256	329

Lowest social class group

	OC ever use	OC never use	Total
Cases	2	25	27
Controls	15	78	93
	17	103	120

- 3.1 What is confounding (10 marks)
- 3.2 What are the conditions that have to be fulfilled to label a variable as a confounder (20 marks)
- 3.3 What is the relationship between ever use of oral contraceptives and ovarian cancer ignoring social class. (20 marks)
- 3.4 Is there evidence to suggest that social class is a confounder. (20 marks)
- 3.5 Make corrections for social class and comment on the relationship between ovarian cancer and ever use of oral contraceptives. (30 marks)

4.

4.1 A blood bank uses two different types of ELISA to screen for HIV infection.

	Sensitivity	Specificity
ELISA I	95%	99%
ELISA II	97%	98%

The hospital is situated in an area where the prevalence of HIV is about 1%.

Using the above tests how would you maximize the safety of blood transfusion with respect to HIV transmission. Show numerical example and calculate probability that a unit of blood transfused could be infected under the system suggested by you. (25 marks)

Can the same system be used in screening individuals in a clinical situation ?

Comment. (25 marks)

4.2 Discuss the usefulness of qualitative methodology in epidemiological studies. (25 marks)

4.3 Discuss selection bias in case control studies. (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)

PART I EXAMINATION

AUGUST, 2007

Date: 14th August, 2007

Time: 9.00 a.m. -11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1. A Case Control study was conducted to determine risk factors for childhood asthma. In the univariate analysis an Odds Ratio (OR) of 2.85 (95% Confidence interval 1.57 to 5.16) was observed for presence of child when cleaning the house. The table below shows the results when the variable 'cigarette smoking inside the house' was added into the logistic regression model.

Variable in the model	Coefficient β	Standard Error	Wald Test
Presence of child when cleaning the house	0.93	0.32	8.25
Cigarette smoking	1.51	0.32	22.14
Constant	- 0.239	0.23	16.82

- 1.1 What factors would you consider in the selection of controls for this study ? (30 marks)
- 1.2 Calculate the adjusted odds ratios and its 95% confidence intervals for the association between childhood asthma and
- a). Presence of child when cleaning the house
- b). Cigarette smoking (30 marks)
- 1.3 What are your conclusions ? (40 marks)
2. Ministry of Health is planning to collect information to improve postnatal services provided in the Medical Officer of Health (MOR) areas.
- 2.1 Discuss the routine data available for evaluation of postnatal services and comment on its limitations. (30 marks)
- 2.2 Suggest methods to improve the quality of routine data. (30 marks)
- 2.3 Describe briefly a study to assess the quality of postnatal services. (40 marks)

3. Given below is a table showing the prevalence, perinatal mortality and crude odds ratios for selected risk markers of perinatal death among 910 births in rural Kenya in 1996 -97.

Risk markers	Prevalence (%)	Perinatal Death Rate /1000 Births	Crude Odds Ratio (95% Confidence Interval)
Maternal haemoglobin (g/dl)			
<7	13.8	192.0	2.2 (1.14 -4.26)
7- 10.9	65.8	110.7	1.2 (0.67-2.00)
>11	-	-	1.00
Mode of delivery			
Assisted	3.4	225.8	2.3 (0.94-5.35)
Caesarian section	13.7	352.9	4.4 (2.13-9.24)
Normal vaginal delivery	-	-	1.00
Maternal infection			
HIV Positive	8.6	115.4	0.96 (0.47-1.99)
Placental malaria	47.1	96.5	0.68 (0.45-1.04)
Normal	-	-	1.00
Body Mass Index (kg/m²)			
<25 th Centile	25.0	192.0	3.1 (1.67-5.64)
26 th - 50 th Centile	25.0	102.7	1.5 (0.76-2.88)
>75 th Centile	25.1	88.9	1.3 (0.64-2.50)
5151 - 75 th Centile	-	-	1.00

- 3.1 What is understood by the term 95% confidence interval ? (10 marks)
- 3.2 What are the risk markers that are significantly associated with perinatal death? Give reasons. (20 marks)
- 3.3 Assuming that odds ratios remain the same after multivariate analysis, which risk factor would you address to ensure an early impact. (20 marks)
- 3.4 Describe the interventions you would adopt to address the selected risk marker. (50 marks)
4. Writes notes on
- 4.1 Factors affecting sample size calculations. (20marks)
- 4.2 Receiver operating characteristic (ROC) curve. (20 marks)
- 4.3 Difference between relative risk and attributable risk and their interpretation. (20 marks)
- 4.3 List the main characteristics of the healthcare market in Sri Lanka, and state their impacts on market demand, supply and price. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
FEBRUARY 2008

Date :- 11th February 2008

Time:- 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. The results of a regression analysis exploring the impact of haemoglobin concentration (range 7 to 15 grams/100ml) on the productivity of estate workers (range 30 to 660 kg tea leaves plucked per month) is given below

Source	SS	df	MS
Model	3426498	1	3426498
Residual	1830789	302	6062
Total	5257287	303	17351
<u>R squared = 0.65</u>	<u>F(1,302) = 565.22</u>		<u>P<0.0001</u>

	Coefficient	Standard Error	95%CL
Haemoglobin	73.11	3.08	67.06 – 79.16
Constant	-530.41	34.19	

- 1.1. Explain these results making use of the seven (7) underlined terms.
(100 marks)

2.

2.1. The National Blood Transfusion Service (NBTS) screens for hepatitis C using a test for antibodies which is 99% sensitive.

In 10,000 samples of blood from the NBTS, the antibody test was found positive in 60 samples. A researcher carried out an expensive procedure (PCR) to detect the presence of the virus in the 60 samples found positive for antibodies and found that 6 samples were positive for the virus.

The researcher recommended that the NBTS should test samples that are positive by the antibody test using the more expensive PCR method (100% sensitivity) to reduce the risk of transfusion related hepatitis C infection.

As the Director of the NBTS what additional information would you need to reduce the risk of transfusion related hepatitis C infection.

(40 marks)

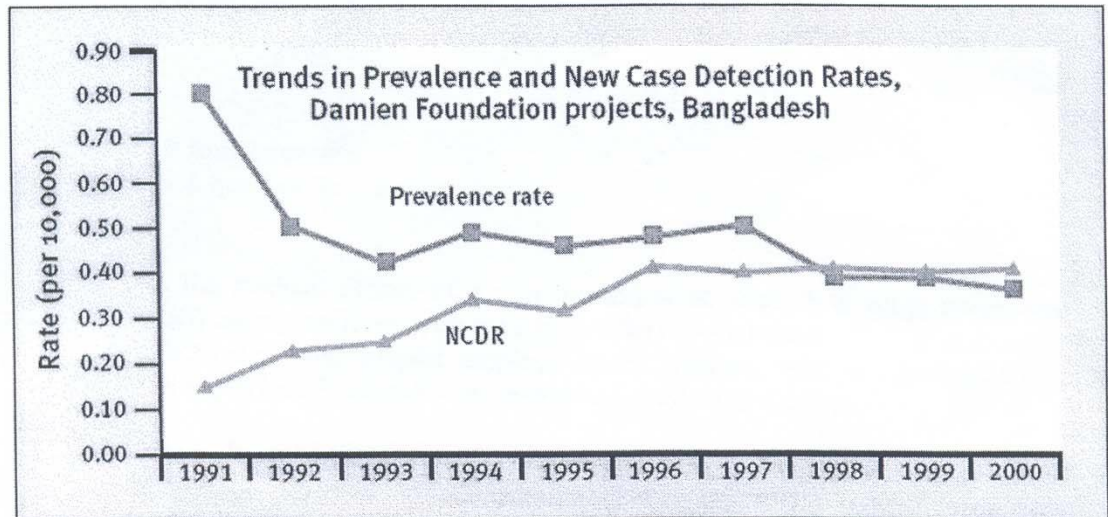
2.2. A surgical registrar describing appendicitis in the elderly based on admissions to his unit finds that in persons over 70 years of age 65% are females. He concludes that among the elderly females are more prone to appendicitis.

2.2.1. Comment on the above. (30 marks)

2.2.2. How would you investigate the above statement using routine data. (30 marks)

3.

- 3.1 The graph given below shows the trends in Leprosy prevalence and new case detection rate (NCDR) in Bangladesh between 1991 and 2000



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- 3.1.a. Describe the graph (20 marks)
- 3.1.b. Discuss the possible reasons for the observed trends (20 marks)
- 3.2. Write notes on
- 3.2.a. Delphi technique (30 marks)
- 3.2.b. Power of a study (30 marks)
4. A researcher wishes to study the prevalence of Hypertension in adults above 30 years of age in a district, where previous studies have shown the estimated level to be around 30%. He desires to be 95% confident that his estimate will be within 5% of the true prevalence on either side (+ or - 5%).
- 4.1 Calculate the sample size required for this study, with a brief explanation of the terms used in the calculation. (25 marks)
- 4.2. The researcher studied 400 persons, and obtained a prevalence rate of 25%. Calculate the 95% confidence interval for this estimate. (25 marks)
- The researcher does not have a list of adults over 30 years in the district. So he decides to use cluster sampling, with "village" as his primary at sampling unit, assumes a design effect of 2, and decides to study 30 clusters.
- 4.3. What is meant by Design effect ? How is it calculated ? (20 marks)
- 4.4 Calculate the sample size required if cluster sampling was to be used, and state (step-wise) how this sample will be identified. (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
FEBRUARY 2008

Date : 12th February 2008

Time: 9.00 a.m. -11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1. As the medical officer *of* a program aimed at controlling acute respiratory infections (ARI) among children, you have been asked to find ways *of* using your manpower more effectively. Your project employs health workers, who are presently occupied with delivering health education to mothers *of* children in the area.

While observing their work, you decide to test their ability to screen for Acute Lower Respiratory Infection (ALRI) in children, using the WHO standard method for assessment and classification *of* children with ARI.

You get the health workers to see *100* children. Following their examination, they call 60 children "normal". Subsequently, the pulmonologist attached to your program examines the same children. He has determined the prevalence *of* ALRI in this group to be 30%, and has agreed with the health workers' diagnosis of ALRI with respect to 24 children.

- 1.1. What is screening ? (10 marks)
- 1.2. Briefly state the meanings *of* the terms "validity" and "reliability" (20 marks)
- 1.3. For using Health Workers in the screening for ALRI, calculate the
- 1.3.1. Sensitivity (10 marks)
- 1.3.2. Specificity (10 marks)
- 1.3.3. Positive Predictive Value (10 marks)
- 1.3.4. Negative Predictive Value (10 marks)
- 1.4. Based on the above, what are your comments on the usefulness of the health worker in screening for ALRI in the following situations
- 1.4.1 at community level (15 marks)
- 1.4.2 in a special primary care clinic for sick children (15 marks)

2. Given below is a table on the results of a multivariate analysis on variables considered to influence neck/shoulder musculoskeletal symptoms among seafood production workers in North Norway.

Table - Adjusted odds ratios for variables influencing neck/shoulder pain among food production workers

Variable		OR*	95% CI**
Type of work			
Administrative work	Administrative workers	1.0	
Production work	Whitefish	2.0	1.1-3.4
	Shrimp	2.5	1.2 - 5.2
	Salmon	2.0	1.1- 3.7
Sex	Males	1.0	
	Females	2.8	1.9-4.4
Duration of service	< 2 years	1.0	
	2 - 10 years	1.0	0.5 - 2.2
	>10 years	0.9	0.4 - 2.6
Cold environment	Never cold at work	1.0	
	Often cold at work	10.5	3.1 - 35.3

* OR - Odds Ratio; ** 95% CI - 95% confidence interval

- 2.1. What do you understand by the term odds ratio ? (30 marks)
- 2.2. Select the risk factors for neck/shoulder pain among seafood production workers from the variables presented in the table above. Give reason/s for your selection. (30 marks)
- 2.3. What are your observations on the odds ratio and its 95% confidence interval given in **bold typing** in the table. (40 marks)
3. Write notes on the following :-
- 3.1. Ethical consideration in conducting experiments on humans (40 marks)
- 3.2. In-depth interviews. (30 marks)
- 3.3. Standardized mortality ratio. (30 marks)

4. In a hospital based case-control study of the relationship between rheumatoid arthritis and oral contraceptive use, the cases consist of a random sample of 100 women with rheumatoid arthritis undergoing treatment in the Rheumatology clinic.
- 4.1. Explain giving reasons an appropriate control group for the study
(20 marks)
- 4.2. What is the outcome(response) variable and how can it be measured ?
(20 marks)
- 4.3. Explain the potential sources of bias that may compromise the conclusions of the study.
(30 marks)
- 4.4. List the potentially confounding variables and suggest methods to limit them.
(30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)
PART I EXAMINATION
AUGUST 2008

Date: 11th August 2008

Time: 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. A researcher wishes to study the effect of meditation (Yoga) on clinical outcome in patients diagnosed with hypertension attending the National Hospital.
 - 1.1. Describe a study design giving reasons for each step of the study.
(40 marks)
 - 1.2. What factors do you consider in calculating the sample size.
(30 marks)
 - 1.3. Outline your plan of analyzing the data giving statistical tests you would use.
(30 marks)

2. The Ministry of Health provides Reproductive Health (RH) services to the community through preventive and curative care services. However, several deficiencies in the programme have been identified which has led to poor programme outcome. To improve the quality and quantity of this service, the authorities have decided to conduct a review of the current RH services in the country.
 - 2.1. What is functional analysis ? Describe its applicability to evaluate the RH activities.
(30 marks)
 - 2.2. Briefly outline a draft plan to evaluate the RH services in a rural district in Sri Lanka, indicating the objectives, sources of information and methods of data collection.
(70 marks)

3. A hospital based case control study was carried out to assess smoking as a risk factor in Chronic Obstructive- Pulmonary Disease (COPD). Newly diagnosed 100 COPD patients and age and sex matched 200 hospital controls were recruited for the -study. The results of the study revealed that there were 70 and 50 smokers among the patients and controls respectively.

- 3.1 Prepare the 2 x 2 table and assess the risk association. (20 marks)

It was found that among the 300 study subjects, 195 (70 patients and 125 controls) were graphite miners and 105 (30 patients and 75 controls) were not. Among the graphite miners, 50 of 70 patients and 40 of 125 controls were smokers. Among the non graphite miners, 20 of 30 patients and 25 of 75 controls were smokers

- 3.2 Calculate the risk association of smoking and COPD among graphite miners and others. (40 marks)

- 3.3 Discuss giving reasons whether the exposure to graphite mining is a confounder or an effect modifier ? (40 marks)

4.

- 4.1 Write notes on

4.1.1 Criteria used to assess the causality. (25 marks)

4.1.2 Construct validity. (25 marks)

4.1.3 Relative risk and attributable risk. (20 marks)

- 4.2 A recently published provisional report estimates the Total Fertility Rate (TFR) to be 2.4 in Sri Lanka.
Discuss the probable reasons for the increase (TFR in 2001 was 1.9). (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
AUGUST 2008

Date: 12th August 2008

Time: 9.00 a.m. -11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1. An Oncologist at the Cancer Institute Maharagama has noted that 17 adult men have been admitted to his ward over the previous calendar year with myeloid leukaemia. He notes that this is far in excess *of* the usual admission pattern. He also notes that the age distribution *of* his patients are younger than expected and that some *of* them were employees *of* the Ceylon Electricity Board working as repair men on power lines.

The Oncologist has sought your help to design a study to investigate a possible association between exposure to electromagnetic fields and leukaemia.

Describe briefly a study that you would design to examine the above relationship.
(100 marks)

2.

- 2.1 Investigators enrolled 2,100 women in a study and followed them annually for four years to determine the incidence rate *of* ischemic heart disease (IHD). No new cases *of* IHD were diagnosed in the first year, but 100 had been lost to follow-up. At the end *of* two years, one case *of* IHD was diagnosed and another 99 had been lost to follow-up. At the end *of* the third year, seven more new cases were diagnosed and 793 had been lost to follow-up. On completion *of* four years, another 8 new cases had been diagnosed and 392 more had been lost to follow-up.

2.1.1 Calculate the incidence rate of IHD among this cohort
(10 marks)

2.1.2 Discuss the factors which may have biased this estimate.
(20 marks)

2.1.3 What steps should the investigators have taken to minimize these biases.
(30 marks)

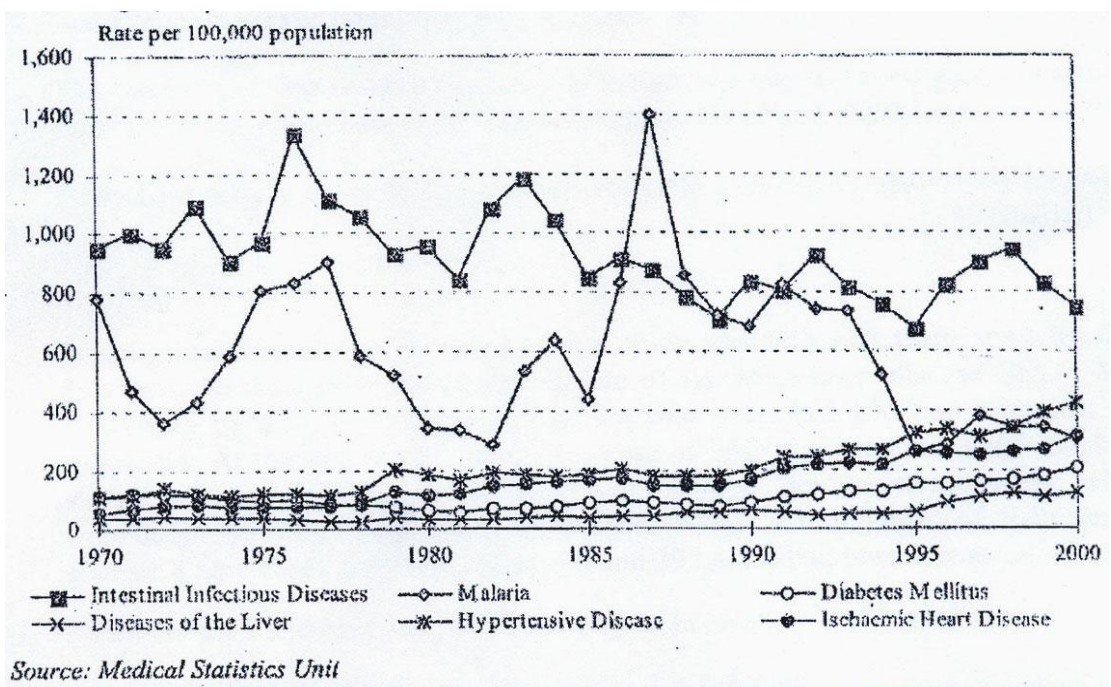
2.2

2.2.1 List the indices commonly used for community assessment of protein energy malnutrition among children under five years of age.
(10 marks)

2.2.2 Describe the advantages and disadvantages of each of these indices.
(30 marks)

3. A blood test (carried out on a drop of blood obtained through a heel prick) with a sensitivity of 95% and specificity of 99% is available to screen for hypothyroidism in newborns.
- 3.1 Design a pilot programme for a district to examine the feasibility of screening of newborns for hypothyroidism using this test. (70 marks)
- 3.2 List the factors that you would consider in carrying out a cost benefit analysis of the above programme. (30 marks)
4. The graph below (Figure I) taken from the Annual Health Bulletin shows the trends in hospitalization for selected diseases in Sri Lanka.

Figure 1: Trends in hospitalization for selected diseases in Sri Lanka, 1970 – 2000



- 4.1 Comment on the trends displayed. (10 marks)
- 4.2 Describe the principles based on which you would prioritize the disease problems seen in the figure. (20 marks)
- 4.3 Outline a plan for prevention of one of the diseases that you have prioritized. (40 marks)
- 4.4 How would you establish a surveillance system to monitor the disease that you have selected? (30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
FEBRUARY 2009

Date : 16th February 2009

Time: 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. In a study, concerned with the impact of child loss experience on fertility behavior, the records of 500 women of low parity (less than 4 births) and 500 women of high parity (4 or more births) were examined. It was found that 400 of the 600 women who had experienced the loss of a child in the past were currently of high parity.
 - 1.1. Construct a table giving the results of the study. (40 marks)
 - 1.2. Given below, are four statements based on the findings of the study. Comment on each of the statements.
 - 1.2.1. 33.3% of the women were of low parity (15 marks)
 - 1.2.2. 40% of the women with low parity has experienced child loss (15 marks)
 - 1.2.3. 80% of the women with child loss were of high parity. (15 marks)
 - 1.2.4. Child loss was not associated with high parity because 20% of the high parity women had not experienced child loss. (15 marks)
2. The residents of a new housing estate have complained that emissions from nearby factories are causing them respiratory problems. How would you investigate this complaint. (100 marks)

3. Write notes on-
- 3.1. Reconstructed (historical) cohort (25 marks)
 - 3.2. Analysis of variance (25 marks)
 - 3.3. Migrant studies (25 marks)
 - 3.4. Twin studies (25 marks)

4. A clinician wishes to test the safety and efficacy of drug X (a new form of Iron) in the treatment of anemia. Drug X is orally administered as a liquid preparation. He wishes to compare it with the standard Iron Sulfate, available as tablets.

He is told that he must do a randomized, double blind, two-arm, parallel group, clinical trial, with clear cut endpoints for efficacy and safety. He is also told that he could subsequently perform an open label extension trial of Drug X if it is found to be acceptable to the local Ethical Review Committee, and to the patients.

- 4.1. What is a randomized clinical trial (RCT) ? Briefly state and describe the steps of a RCT. (35 marks)

- 4.2. Briefly explain the meanings of the following :

4.2.1. Blinding. What is a triply blinded trial ? (10 marks)

4.2.2. Two arm. What could the two arms in this study consist of ? (10 marks)

4.2.3. Parallel group (10 marks)

4.2.4. Suggest TWO efficacy endpoints for this trial, and THREE safety features which the investigator would be looking for. (10 marks)

4.2.5. In contrast to this trial, what is an “Open label “ trial ? (10 marks)

- 4.3. List and briefly describe the variables used in the calculation of the sample size for this study. (15 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
FEBRUARY 2009

Date : 17th February 2009

Time: 9.00 a.m. – 11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1.
 - 1.1. What do you understand by the phrase “ a probability of less than 0.05” ?
(20 marks)
 - 1.2. A study was conducted to determine the factors associated with intimate partner violence. In the multivariate analysis, “standard of living index” was observed to have an odds ratio (OR) of 8 with a 95% confidence interval of 1.7 – 36.7 which had a probability of <0.001. If you are given a choice to report either the **probability level** or the **95% confidence interval** (choice of only one) describe giving reasons the choice you would make.
(40 marks)
 - 1.3. Describe Type 1 and Type II errors in the context of an epidemiological study exploring aetiology.
(40 marks)
2.
 - 2.1. Describe “validity” of a research study.
(30 marks)
 - 2.2. “ Healthy worker effect is considered as a form of selection bias
Discuss this statement.
(30 marks)
 - 2.3. Describe the different ways in which “ confounding bias” can be minimized.
(40 marks)

3. The Ministry of Health is interested in developing norms for symphysio-fundal height in pregnancy for the general population with the objective of using them for assessing for assessing the foetal growth.
- 3.1. State the study design you would use, giving reasons. (35 marks)
 - 3.2. Discuss the study population you would use. (30 marks)
 - 3.3. Select an appropriate sampling method giving reasons for your selection. (20 marks)
 - 3.4. What data do you require to calculate the sample size ? (15 marks)
4. A community based study was carried out to assess the prevalence and risk factors of a chronic gynaecological morbidity. As a first step screening of all eligible women was carried out.
- 4.1. Explain the steps you would take to identify the cases for a prevalence estimate. (30 marks)
 - 4.2. Discuss the identification of controls. (30 marks)
 - 4.3. Discuss the biases that can occur in this study. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
AUGUST 2009

Date : 10th August 2009

Time: 1.30 p.m. - 3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. The prevalence of Anemia among adolescent girls in an urban slum area is 70%, and among men in a well-to-do neighbourhood is 20%.

A test to screen for anaemia with sensitivity of 90% and specificity of 90% is used on 100 subjects from each of the two groups (Adolescent girls, and men).

- 1.1. Represent the data in two 2 x 2 tables, one for each of the two groups
(30 marks)
- 1.2. Calculate the predictive values for each group. What do they signify ?
(20 marks)
- 1.3. A doctor uses the screening test is on
- (a) An adolescent girl from the urban slum
(b) A young man from the well-to-do-neighbourhood.
Both test negative.

The doctor wants to check the probability that they (the girl and the man) have anemia, despite testing negative. Calculate these probabilities.
(20 marks)

- 1.4. Write a note on the meaning and usefulness of ROC curve.
(30 marks)

2. In a large scale clinical trial, to study the efficacy of a drug A versus a placebo to reduce deaths from myocardial infarction (MI), 6000 MI patients were randomized equally into two groups to receive drug A and the placebo. The deaths among the study group and the placebo groups were 210 and 240 respectively.

- 2.1. Display the above data in a Table format (10 marks)
- 2.2. Calculate and interpret the effect of drug A on Myocardial infarction (40 marks)
- 2.3. How many patients should be treated to avert one death ? (20 marks)
- 2.4. List features of **this study** you would use to evaluate the validity of the findings. (30 marks)

3.

3.1. As a Medical Officer at a district level, Dr. X has received media reports that there are deaths occurring among older employees of a nuclear power plant in his area. The media alleges that the deaths are linked to lack of safety at the power plant, which is denied by the management of the plant. Dr. X is called to investigate.

The data over the past year shows the following:

- There are 1500 employees between 41-60 years of age, of whom 1000 are 41-50 years of age
- There have been 10 deaths reported in the past year in the groups of employees 41-60 years of age

Briefly state the conclusion which Dr. X reaches by tabulating the data and applying the principles of standardization, given that the ASDR of the 41-50 age of group and the 51-60 age group at district level is 0.05% and 0.1% respectively. (50 marks)

3.2. During his investigation, Dr. X observes the following

- The employees work in two broad capacities, secretarial/office-based, and those working directly in the nuclear reactor.
- There are suspicious skin lesions in some of the workers.
- The system of medical records at the plant is good – every worker has a well documented record of health status.

Suggest a study design whereby Dr. X can examine the association between working in the nuclear plant, and development of skin lesions. Briefly explain the steps of this study. (50 marks)

4.

4.1. Explain the term “Meta Analysis” (20 marks)

4.2. Describe the basic steps of a plan to conduct a Meta Analysis to study summarized estimates of risk factors for Chronic Renal Disease. (80 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE/COMMUNITY DENTISTRY)
PART I EXAMINATION
AUGUST 2009

Date : 11th August 2009

Time: 9.00 a.m. – 11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

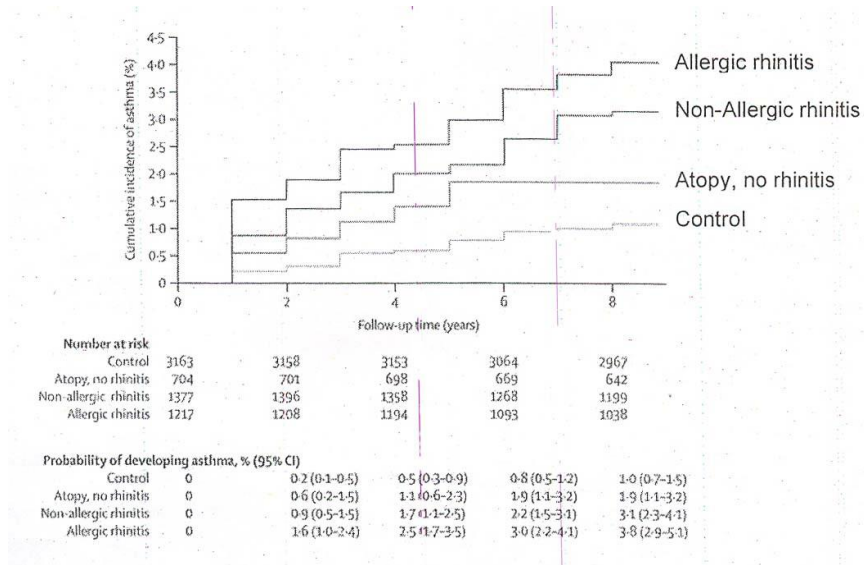
1. In a study to determine the prevalence of smoking among adult males in the Gampaha District it was decided to use the electoral register (voters' list) as the sampling frame to draw a simple random sample.
 - 1.1. Discuss the advantages and disadvantages of the voters' list as the sampling frame for this study. (40 marks)
 - 1.2. Discuss the advantages and disadvantages of simple random sampling as the sampling method for this study. (30 marks)
 - 1.3. Calculate the minimum sample size required if the anticipated prevalence was 30% and the researchers wanted the total width of the 95% confidence interval (CI) to be 6%. (20 marks)
 - 1.4. Calculate the 95% CI if the prevalence turned out to be 40% using the sample size calculated in 1.3. above. (10 marks)

2. It is claimed that internally displaced persons in a camp in Vavunia still live in fear of being identified as terrorists.
 - 2.1. Describe the steps in designing a qualitative study to investigate this claim. (40 marks)
 - 2.2. Describe the advantages and limitations of your study design. (20 marks)
 - 2.3. Describe the process of analysis of collected information giving examples for each step. (40 marks)

3. Write short notes on the following ;-
 - 3.1. Economic implications of HIV / AIDS. (30 marks)
 - 3.2. Social marketing. (35 marks)
 - 3.3. Causal inference. (35 marks)

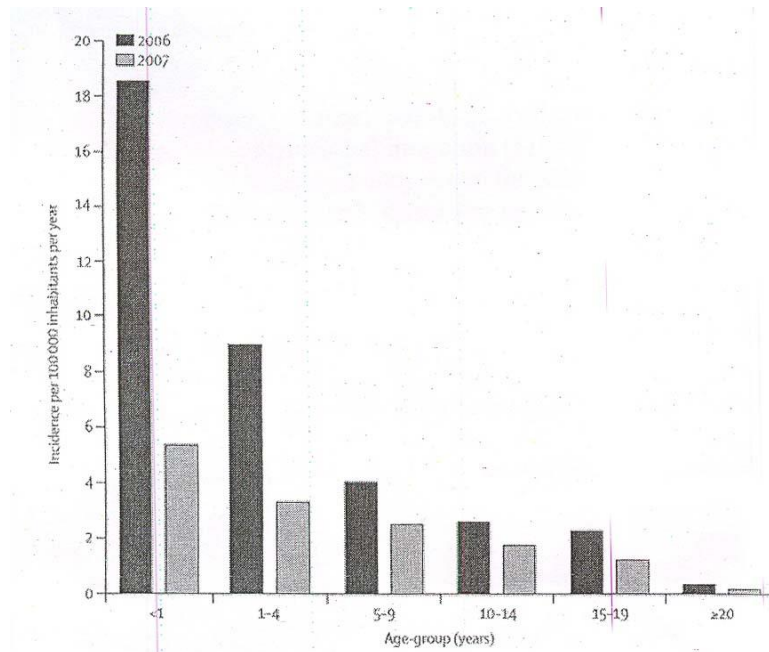
4. Comment on figure 1 and 2

4.1. **Figure 1** Cumulative incidence of asthma by year of follow-up in 3163 individuals in the control group. 704 who had atopy alone, 1377 who had non-allergic rhinitis, and 1217 who had allergic rhinitis.



(60 marks)

4.2. **Figure 2** Incidence of reported measles cases in Europe by age-group (2006-07)



(40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

FEBRUARY 2010

Date : 15th February 2010

Time : 1.30 p.m.-3.30 p.m.

PAPER I

Answer **all four** questions.

Answer each question in a separate book.

1. A study was done comparing the prevalence rate for Type 2 Diabetes Mellitus (T2DM) in two towns, Town A and Town B, by studying 1000 persons in each of the towns. The data available is as follows:

Age group (Years)	Town A		Town B	
	Total Population	Cases of T2DM	Total Population	Cases of T2DM
25 - 34	300	6	800	40
35 - 44	300	12	100	12
45 - 54	200	28	50	11
55+	200	66	50	21

- 1.1. Calculate the crude prevalence rates for T2DM in Town A and Town B.
(10 marks)
- 1.2. Calculate the age-adjusted prevalence rates for T2DM in the two towns.
(40 marks)
- 1.3. There is a recent media report which states that Town A has a worse morbidity status with respect to T2DM when compared with the rest of the country.
As the Medical Officer of Health, critically evaluate the media report, given that the Age-specific prevalence rates for T2DM in the country are 5% in the 25-44 year age group, and 25% in the 45+ year age group.
(30 marks)
- 1.4. Given that T2DM is a health problem in South Asian populations, list the health promotional strategies to address the problem at population level.
(20 marks)

2. Health services for the Elderly are not well developed in the country.
Describe the following –

- 2.1. Health problem of the Elderly population. (30 marks)
- 2.2. Demographic measures of Elderly populations. (30 marks)
- 2.3. Development of different levels of health care services for the Elderly in the country. (40 marks)

3. A phase III trial was conducted including 490 newly diagnosed glioblastoma patients. They were assigned to receive either standard radiotherapy or identical radiotherapy with concomitant temozolomide followed by upto six cycles of adjuvant temozolomide..Survival analysis was applied according to Kaplan-Meier method and Cox proportional regression. Hazards ratio for death in the radiotherapy and temozolomide group relative to the radiotherapy group was 0.63 with a 95% confidence interval of 0.53 to 0.75. The data were analyzed according to 'intention to treat' principle.

- 3.1. State the features of a phase III trial. (15 marks)
- 3.2. Explain briefly Kaplan-Meier method. (25 marks)
- 3.3. Name the statistical test that could be applied to compare the two survival curves. (10 marks)
- 3.4. List the reasons for applying Cox proportional regression. (15 marks)
- 3.5. Interpret the results of the above study. (15 marks)
- 3.6. Explain the term “ intention to treat analysis”. (20 marks)

4. A research study was carried out to investigate the relationship between exercise and occurrence of Myocardial Infarction (MI). In the high exercise group, 25 cases of MI were recorded after 4000 person-years (P-Y) of follow up, while for the low exercise group, 105 cases of MI were recorded after the same follow up period.

4.1. Tabulate the above data. (10 marks)

4.2. State the study design giving reasons. (10 marks)

4.3. Calculate appropriate measures of effect of exercise. (30 marks)

4.4. Given below are the data from this study for obese and non obese subjects. Evaluate the effect of obesity in the relationship of exercise and MI (30 marks)

Obesity status	No. of MI cases	p- Y follow up
Obese subjects		
Low exercise	90	3000
High exercise	10	1000
Non obese subjects		
Low exercise	15	1000
High exercise	15	3000

4.5. List the steps you would take to improve the quality of data in the above study (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

FEBRUARY 2010

Date : 16th February 2010

Time : 9.00 a.m.-11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1.

1.1. What is bias ? (05 marks)

1.2. A study to assess the association between diabetes and smoking compared a group of hospitalized individuals with diabetes (cases) with a group of volunteer individuals without diabetes (controls) who were full-time employees of the same hospital where the cases were identified.

The results from this study reported a strong association between Diabetes and smoking, for the first time in the literature.

1.2.1. Describe the types of bias that may be present in the above study giving reasons. (50 marks)

1.2.2. How would the above biases affect the external and internal validity of this study ? (30 marks)

1.3. "The magnitude of this association is likely to be over estimated"
Discuss this statement. (15 marks)

2. Compare and contrast the following –
 - 2.1. Absolute risk reduction and relative risk reduction. (25 marks)
 - 2.2. Proportional mortality ratio and standardized mortality ratio. (25 marks)
 - 2.3. Precision and validity. (25 marks)
 - 2.4. Chi square test and Z test for proportions. (25 marks)

- 3.. You are required to plan a surveillance system in Sri Lanka for control of HINI influenza.
 - 3.1. Describe the sources of data that you will need ? (25 marks)
 - 3.2. Discuss the advantages and disadvantages of the different data sources (25 marks)
 - 3.3. Outline the methods//strategies available for conducting surveillance ? (50 marks)

4. A researcher wished to study the effect of meditation to relieve pain cancer patients.
 - 4.1. State the most appropriate study design giving reasons. (20 marks)
 - 4.2. Describe the factors that should be considered in calculating the sample size for this study. (40 marks)
 - 4.3. Discuss the problems that can arise in using "meditation practice" in the above study. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

AUGUST 2010

Date : 9th August 2010

Time : 1.30 p.m.-3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1.
 - 1.1. What is “programme evaluation” ? (10 marks)
 - 1.2. What are the different purposes of conducting “ programme evaluation” ? (20 marks)
 - 1.3. The immunization programme against rubella infection for school children in Sri Lanka has been interrupted during the past few years. State briefly the reasons for this interruption. (20 marks)
 - 1.4. It is important to evaluate the Rubella Immunization Programme conducted in school to take effective decisions to re-establish the programme. As a Medical Officer of Health, describe the steps in planning a “programme evaluation” of the School Rubella Immunization Programme in your health area. (50 marks)

2.
 - 2.1. Define economics. (10 marks)
 - 2.2. Define health economics. (10 marks)
 - 2.3. What is economic evaluation ? (10 marks)
 - 2.4. Describe different types of economic evaluation. (20 marks)
 - 2.5. Discuss the elements you would focus on in carrying out a cost-benefit analysis of a free government-run one day screening camp for diabetes mellitus held in a rural area. (50 marks)

3. A study was conducted to compare the rates of road traffic accidents (RTA) in two cities (City X and Y). The researchers were impressed with studies suggesting an association between the use of cell phones and RTA. They wanted to adjust the rates of RTA in the two cities for cell phone use. Data on cell phone use and RTA in the two cities were collected and are presented in the table below.

Cell phone use	City X		City Y	
	Persons	No. of accidents	Persons	No. of accidents
Heavy	4479	293	100	2
Moderate	974	27	300	6
Never	1106	15	8293	145
Total	6559	335	8693	153

- 3.1. Based on the data given in the table above,

3.1.1. Calculate the crude RTA rates and cell phone use specific RTA rates for city X and Y. Comment on the RTA rates in the two cities.

(20 marks)

3.1.2. Calculate the standardized RTA rates for the two cities.

(30 marks)

3.1.3. Briefly describe how these standardized rates compare with each other and with the crude rates.

(20 marks)

- 3.2. Write briefly on the steps of indirect standardization.

(30 marks)

4. The following table summarises the results of a study to evaluate an instrument to screen for depression. The gold standard used was the routine psychiatric assessment based on ICD 10 (international Classification of Diseases 10) criteria. The sample included 250 patients with depression and 250 normal people diagnosed on routine psychiatric assessment.

Table – Results of the new instrument for detecting depression against the gold standard (GS) assessment.

Screening test	Routine psychiatric assessment (GS)		Total
	Depressed	Normal	
Depressed (test positive)	230	10	240
Normal (test negative)	20	240	260
Total	250	250	500

- 4.1. What is the probability that a patient with depression will test positive ?
What is this test characteristic called ? (15 marks)
- 4.2. What is the probability that a patient testing negative with the new instrument is not truly depressed ? What is the test characteristic called ? (15 marks)
- 4.3. Calculate the likelihood ratio of the positive test result (LR+) (15 marks)
- 4.4. How would you interpret LR+ ? (15 marks)
- 4.5. What is the post test probability of depression ? What are the factors which determine the post test probability of depression ? (20 marks)
- 4.6. Comment on the usefulness of the new instrument in screening for depression in the community. (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

AUGUST 2010

Date : 10th August 2010

Time : 9.00 a.m.-11.00 a.m.

PAPER II

Answer **all four** questions.

Answer each question in a separate book.

1. The following data pertain to a population in Area X for a given year.
- | | | |
|------------------------|---|---|
| Mid year population | = | 20,000 |
| No. of live births | = | 400 |
| No. of stillbirths | = | 6 |
| No. of neonatal deaths | = | 5 in the period 0-7 days
5 in the period 8-28 days |
| No. of infant deaths | = | 20 |

Table 1 - Distribution of live births among women in the reproductive age group.

Age	No. of women	No. of live births
15-24	2000	250
25-34	1750	125
35-44	1250	25

- 1.1. Calculate the Crude Birth Rate, and state why it is called "Crude".
(5 marks)
- 1.2. Define Perinatal Death.
Calculate the Perinatal Mortality Rate for area X.
Describe two measures to reduce perinatal mortality in a rural area.
(20 marks)
- 1.3. Calculate the General Fertility Rate.
Calculate the Age Specific Fertility Rates (ASFR) for the categories given in Table 1.
Identify the age group with the highest ASFR and describe two interventions for this group aimed at addressing the unmet need for contraception.
(25 marks)
- 1.4. Calculate the Total Fertility Rate for the population in Area X.
State the meaning of the term "Total Fertility Rate".
List and describe five determinants of the Total Fertility Rate in a rural area.
(30 marks)
- 1.5. State the meaning of the terms.
1.5.1. Cross Reproduction Rate.
1.5.2. Net Reproduction Rate.
(20 marks)

2. A researcher wishes to study the usefulness of spirituality in improving workers performance in a large beverage industry in Sri Lanka.
 - 2.1 Describe the most suitable study design that can be adopted for this study giving reasons. (40 marks)
 - 2.2 Discuss methodological difficulties that are likely to arise and ways of overcoming those. (60 marks)

3. A study was conducted to determine the association between domestic violence during pregnancy and infant mortality, Mothers were recruited from post-natal wards of a Teaching Hospital and followed up for one year. An interviewer administered questionnaire which was ensured for its content validity was used to gather all relevant data on the day of recruitment. Data were analyzed applying the Log Rank test and Cox's Proportional regression. The results are given below.

Table 2 - Cox's Proportional model for infant mortality.

	Beta coefficient	Standard Error	p-value
Experience of more than one episode of domestic violence	0.518	0.217	<0.05
Maternal age > 35 years	0.254	0.313	>0.05
Parity > 4	0.157	0.381	>0.05

- 3.1 What do you understand by content validity of the questionnaire of the above study ? (20 marks)
- 3.2. Briefly describe the biases that could occur when assessing domestic violence. (20 marks)
- 3.3. State the null hypothesis for the above study. (10 marks)
- 3.4. Describe the Log Rank test. (20 marks)
- 3.5. List two (2) advantages of applying Cox's Proportional regression for the above study. (10 marks)
- 3.6 Calculate and interpret the Hazard Ratio and its 95% confidence interval for domestic violence. (20 marks)

4. Write notes on following,
 - 4.1. The process of coding in qualitative research (25 marks)
 - 4.2. The role of judiciary in health policy development (25 marks)
 - 4.3. Assessing heterogeneity in meta-analysis (25 marks)
 - 4.4. Conflict of interest in research. (25 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) PART I EXAMINATION
MARCH 2011

Date : 7th March 2011

Time : 1.30 p.m.-3.30 p.m.

PAPER I

Answer all four questions.
Answer each question in a separate book.

1.

Table 1 : Reduction in secular trend of CVD mortality attributed to population based risk factors and to the treatment with medication and surgery (%)

Jurisdiction and period	Percent reduction attributable to population based risk factor	Percent reduction attributable to treatment with medications and surgery
Scotland, 1975-94	60	40
New Zealand, 1982-93	54	46
Finland, 1982 -97	48	31
Ireland, 1985-2000	48	44
United States 1980-2000	47	44

Source: HNP, World Bank 2010

1.1. Discuss the conclusions you arrive at from the above. (25 marks)

1.2. Based on the above what strategies would you recommend for implementation by the Ministry of Health ? (25 marks)

1.3. From the strategies listed above, critically analyse the implications in terms of feasibility of implementation of any one strategy you propose for Sri Lanka. (50 marks)

2. A study was conducted to determine the factors associated with birth weight in newborns. Multiple linear regression with backward elimination was performed and the results are shown in the following tables.

Model Summary

Model	R	R Square	Adjusted R Square
	0.425(a)	0.180	0.175

a Predictors (Constant), BMI, Primi Para, Low educational level, Period of gestation

	Un-standardized Coefficients	Standard error	Standardized Coefficients
Constant	-509.35	353.77	
BMI	26.75	4.63	0.214
Primi Para	-97.90	35.34	-0.103
Low educational level	-214.50	82.93	-0.095
Period of gestation	75.67	8.75	0.318

- 2.1. Briefly describe how you would assess the internal validity of the study. (30 marks)
- 2.2. Describe the term ‘backward elimination’. (15 marks)
- 2.3. Define and interpret R Square. (15 marks)
- 2.4. Interpret regression coefficient for BMI. (20 marks)
- 2.5. How would you use standardized coefficients for interpreting the model ? (10 marks)
- 2.6. List two (02) assumptions you would make when building a regression model. (10 marks)

3. A cluster randomized trial was conducted to assess the efficacy of combination of two antibiotics for preventing post surgical complications compared to use of a single specific antibiotic. Intention to treat analysis was performed and the results are given below.

Table : Distribution of subjects by interventions and outcomes

Outcome \ Intervention	No. of subjects with complications	No. of subjects without complications	Total
Combination of two antibiotics	50	220	270
Use of single antibiotic	90	190	280

- 3.1. What is meant by ‘ Cluster randomized trial’ ? (10 marks)
- 3.2. List the considerations in determining the simple size for the study ? (10 marks)
- 3.3.
- (a). Define ‘concealment of an allocation’. (10 marks)
- (b) Explain how it would improve the quality of the study. (10 marks)
- 3.4.
- (a) Define intention to treat analysis. (10 marks)
- (b) Explain the advantages of intention to treat analysis.(10 marks)
- 3.5.
- (a) Calculate absolute risk reduction and its 95% confidence interval. (15 marks)
- (b) Interpret the absolute risk reduction and its 95% confidence interval calculated above. (10 marks)
- 3.6
- (a) Calculate the number needed to treat. (10 marks)
- (b) Interpret number needed to treat. (05 marks)

4. A researcher wants to study the validity of a test to detect anaemia. The test, called test X, is reported in literature to have a sensitivity of 70% and a specificity of 60%.
- 4.1. Assuming a precision of five percentage points on either side of the estimates of sensitivity and specificity, calculate the sample size required for this study. (25 marks)
- 4.2. Considering the high prevalence of anaemia, you are asked to design a randomized controlled trial among women of reproductive age to assess the efficacy of a new oral formulation designed to improve hemoglobin levels.
- 4.2.1. List five (05) important ethical principles you would keep in mind while designing this study. (10 marks)
- 4.2.2. Describe each principle listed above in the context of the above study. (25 marks)
- 4.3. “Anaemia is a multifactorial disease”. Comment on this statement. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE) PART I EXAMINATION
MARCH 2011

Date : 8th March 2011

Time : 9.00 a.m.-11.00 a.m.

PAPER II

Answer all four questions.
Answer each question in a separate book.

1.
 - 1.1. Describe the term “causality” in public health. (30 marks)
 - 1.2. Discuss the epidemiological criteria that can be used to suggest evidence of causality. (70 marks)

2. A research group decided to test the usefulness of school children of grades 6 and 7 as conveyors of health messages to improve their parents’ knowledge on nutrition.
 - 2.1. Describe a study design that you would use for this research giving reasons. (40 marks)
 - 2.2. List three (03) variables to measure change in parents and state the scales of measurement of these variables. (20 marks)
 - 2.3. List two (02) statistical tests you use to test the change in knowledge. (20 marks)
 - 2.4. State the factors that could influence the outcomes of the study. (20 marks)

3. *“The resolution calls on the health sector to upscale actions in adaptation of projects to limit the impact of climate change on health; to raise global awareness of the impacts of health from climate change at national and international levels; and to boost political attention and action”.* (extract from Sixty-first World Health Assembly, Resolution WHA, 61.19, May 2008).

Describe how you, as a public health specialist, would seek to implement this resolution at provincial level. (100 marks)

4. It has been proposed to charge a fee from the patients who seek treatment from the government hospitals with alcohol related complaints.

Critically evaluate the feasibility of this proposal. (100 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

AUGUST 2011

Date : 8th August 2011

Time : 1.30 p.m.-3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. A medical officer of health wishes to design a program aimed at improving the health status of elderly diabetics in a rural area. He decides to do a situational analysis as his first step.
 - 1.1. What is a “situational analysis” ? (05 marks)
 - 1.2. What are the reasons for doing a situational analysis as a first step ? (15 marks)
He wishes to do a community survey using cluster sampling.
 - 1.3. What is cluster sampling ? (10 marks)
 - 1.4. Calculate the sample size for the survey, given a 20% anticipated prevalence of diabetes in the elderly, with 5% precision and 5% level of alpha. Adjust for design effect and explain the basis for the design effect used. (35 marks)
 - 1.5. Having calculated the sample size, list and briefly explain the steps used in cluster sampling. (35 marks)

2. A medical faculty in Sri Lanka decided to commission a study aimed at assessing its graduates’ level of competency during internship. You are the principal investigator of this research study which includes a qualitative component.
 - 2.1. State the study design which you may use, giving reasons.(20 marks)
 - 2.2. Describe the steps in performing the study. (40 marks)
 - 2.3. Describe methods that you may use in analyzing information collected in the study. (40 marks)

3. A study was conducted to assess the diagnostic accuracy of symptoms in 1199 patients presenting to an out patients department of a General Hospital with chest pain. Coronary Heart Disease (CHD) was the reference condition. the following table shows the results of the study.

Symptoms	Sensitivity %	Specificity %	Predictive Value positive %
Pain worse with Exercise (n = 252)	43.3	82.9	30.4
Known clinical Vascular disease (n = 241)	52.8	88.3	44.4
Known diabetes (n = 150)	27.5	89.2	30.6

- 3.1. Describe the method you would use to select the study population if you were to conduct this study in another setting. (10 marks)
- 3.2. Calculate the diagnostic accuracy of ‘pain worse with exercise’ for CHD. (20 marks)
- 3.3. Calculate the likelihood ratio positive for ‘pain worse with exercise’ and its 95% confidence interval. (20 marks)
- 3.4. How would you use the likelihood ratio positive derived from the above study in another setting for diagnosis of CHD ? (20 marks)
- 3.5. Explain briefly three biases that could have occurred when conducting the above study. (30 marks)

4. A study was conducted to determine the association between inadequate gestational weight gain and selected factors in a Provincial Hospital. Five hundred (500) pregnant women were recruited at their first antenatal clinic visit and followed up until delivery. Physical activity which was a binary variable was assessed using a standard questionnaire. The result of the final multiple logistic regression model for inadequate gestational weight gain are given below :

Exposure variables	Beta coefficient	Standard Error	Wald Test
Engage in Physical activity	0.489	0.171	8.175
Body Mass Index (kg/m ²)	-0.091	0.021	18.833
Constant	2.084	0.465	20.138

- 4.1. Describe the errors that may have occurred when assessing the
- 4.1.1 Physical activity level (15 marks)
- 4.1.2. Gestational weight gain. (15 marks)
- 4.2. Briefly outline the method to assess reliability of the physical activity level reported by the respondents. (20 marks)
- 4.3. Calculate the adjusted odds ratios and the 95% confidence intervals for the association between gestational weight gain and
- 4.3.1. Physical activity (15 marks)
- 4.3.2. Body mass index (15 marks)
- 4.4. Interpret the above results (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY)

PART I EXAMINATION

AUGUST 2011

Date : 9th August 2011

Time : 9.00 a.m.-11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1.

1.1.

- 1.1.1. Describe “confounding “ and effect modification”. (10 marks)
- 1.1.2. How would you address the problems of confounding and effect modification in the context of stratified analysis. (15 marks)

1.2.

- 1.2.1. Describe “selection bias”. (10 marks)
- 1.2.2. How would you address the problem of “selection bias” in case control studies. (40 marks)

1.3.

- “ The mean is the best measure of the center.” Discuss your answer giving examples. (25 marks)

2.

2.1. Calculate the values of x, y, z in the following stem and leaf plot. Take the mean as 23.

1	0 9 x
2	0 y
3	z

(10 marks)

2.2.

Discuss the following statements giving reasons.

- 2.2.1. One tail test is more powerful than the two tail test. (20 marks)
- 2.2.2. Paired t test is more powerful than the Pooled t test. (20 marks)

2.3.

- 2.3.1. Define health economics. (10 marks)
- 2.3.2. What is economic evaluation ? (10 marks)
- 2.3.3. List the different types of economic evaluation giving one example for each type. (30 marks)

- 3.
- 3.1. Define the “P” value. What are the advantages and disadvantages of using the confidence interval over the P value ? (30 marks)
- 3.2. From a public health perspective, ‘population attributable risk’ is more useful than the ‘attributable risk’. Discuss the statement. (35 marks)
- 3.3. What is preventive fraction ? Describe the preventive fraction with a hypothetical example. (35 marks)
4. In a prospective study to determine the relationship of Hepatitis B and C viruses to newly developed hepatocellular carcinoma, the interaction between alcohol and Hepatitis C virus (HCV) was examined. The results are presented in the following table:

Alcohol drinking	Anti-HCV	Number of persons	Number of Cases of Hepatocellular carcinoma	Incidence Rate (per 100,000)
Absent	Negative	8968	65	78.7
Absent	Positive	2352	27	127.1
Present	Negative	461	13	309.7
Present	Positive	90	3	384.9

- 4.1, Using the category “absent –negative” as reference, calculate the relative risk and the attributable risk (in the exposed) for those with positive antibodies to HCV only, for those exposed to alcohol only, and for those exposed to both. (60 marks)
- 4.2. Calculate the expected joint relative risk (multiplicative model) and the expected joint attributable risk in the exposed (additive model). (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY) PART I
EXAMINATION
FEBRUARY 2012

Date : 13th February 2012

Time : 1.30 p.m.-3.30 p.m.

PAPER I

Answer all four questions.

Answer each question in a separate book.

1. A study was carried out to test the effectiveness of a new therapy versus the standard therapy for a chronic disease. The outcome of the study showed that in 40 of 200 patients who received the new therapy the treatment was successful. Among the 200 patients who received standard therapy 20 showed treatment success.
 - 1.1. State the study design and display the results of the study in a 2 x 2 Table. (10 marks)
 - 1.2. List the steps you take to ensure the validity of the study and for each step, state how this is achieved. (40 marks)
 - 1.3. Name two statistical tests you would use to test whether the difference in outcome of the two drugs is statistically significant or not. (10 marks)
 - 1.4. Test the statistical significance of the difference of the outcomes of the study and interpret the results. (20 marks)
 - 1.5. List the ethical issues related to this study. (20 marks)

2.
 - 2.1. Write a note on the problems faced by the elderly in developing countries. (30 marks)

 - 2.2. A researcher wants to study the status of the elderly population in a rural area in a district in Sri Lanka in order to design a programme aimed at improving the health and wellbeing of the elderly.
List and briefly describe FIVE epidemiologic measures of the health and wellbeing of older persons which he could study. (25 marks)

2.3. The researcher wishes to incorporate quantitative and qualitative components in the study.

For the QUANTITATIVE study component, he finds that the list of villages with their population is available for the rural area, but no further accurate population data at the village level. List and briefly describe the steps of this study under the following headings.

- Study design chosen (5 marks)
- Sample size determination (10 marks)
- Sampling strategy and identification of the study population (15 marks)

2.4. For the QUALITATIVE study component, suggest THREE techniques which he could use and describe them briefly. (15 marks)

3. A study was conducted to determine the role of HIV infection on lung cancer . All study participants were followed up for 12 years. Potential confounding factors were assessed and self reported lung cancer status was recorded. Standardized incidence ratios (SIR) were also calculated using age and sex specific data for the population based surveillance program. The results are shown in Table 3.1

Table 3.1

	HIV positive	HIV negative
Life time cigarettes consumption among Current smokers (pack years) Median (IQR)	90 (3.8 to 16.5)	70 (2.5 - 15.6)
Person years	18.825	6176
Observed number of cancers	12	2
Expected number of cancers	3.65	0.95

3.1. List sources of bias in the above study. (10 marks)

3.2. Explain how the investigators would calculate ‘person years’(10 marks)

3.3. Calculate incidence rate ratio (IRR). (15 marks)

3.4. Calculate and interpret 95% confidence intervals for IRR. (20 marks)

3.5. Explain how the investigators would calculate SIRs. (15 marks)

3.6. Calculate and interpret SIRs. (30 marks)

4. A study was conducted to determine the associated factors for vitamin D levels among pre-school children in a selected MOH area. Multiple linear regression with backward elimination was performed and the results are shown in the following Tables.

Table 4.1

Model	Sum of Squares	Degree Of freedom	Mean Square	F value	P value
Regression	545.0	2	b-----	d-----	0.03
Residual	26730.6	a-----	c-----		
Total	27275.6	339			

- a. Predictors : Constant), Age, PTH (para thyroid hormone)
 b. Dependent Variable : vitamin D

Table 4.2

Model	Unstandardized Coefficients	Standard Error	T value	P value
(Constant)	28.06	2.15	13.04	0.00
PTH	-0.05	0.026	-2.03	0.04
Age	-0.07	0.042	-1.59	0.11

PTH - para thyroid hormone

- 4.1. State, with justification, the sampling method which could be used for this study. (20 marks)
- 4.2. Calculate the values for a, b, c and d in Table 4.1. (20 marks)
- 4.3. Briefly describe 'back ward elimination' as used in this study. (10 marks)
- 4.4. Interpret regression coefficient for PTH. (20 marks)
- 4.5. Calculate 95% confidence interval for regression coefficient of PTH. (10 marks)
- 4.6. Comment on the adequacy of the model. (20 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
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MD (COMMUNITY MEDICINE / COMMUNITY DENTISTRY) PART I
EXAMINATION
FEBRUARY 2012

Date : 14th February 2012

Time : 9.00 a.m.-11.00 a.m.

PAPER II

Answer all four questions.

Answer each question in a separate book.

1.

1.1. In a study done on 200 persons with Glaucoma, the mean systolic blood pressure was 145 mm Hg. And the standard deviation was 25 mm Hg.

1.1.1. What is the “point estimate “ for the average blood pressure of all persons with Glaucoma ? (10 marks)

1.1.2. Construct and interpret the 95% confidence interval for the mean systolic blood pressure of the persons with Glaucoma. (30 marks)

1.1.3. The researcher wishes to determine the prevalence of high blood pressure among persons with Glaucoma. How would you calculate the sample size required for this study ? (25 marks)

1.1.4. List and briefly describe two types of errors that could arise in the measurement of blood pressure. (20 marks)

1.2. Calculate the values of X, Y and Z in the following ‘ stem and leaf ’ plot. Take the mean as 20. (15 marks)

1	0	9	X
2	Y	0	
3	Z		

2. Briefly describe the following ;

2.1. The background to Ethics in human research. (40 marks)

2.2. The ethical principles governing research on human subjects. (60 marks)

3. As a Medical Officer of Health (MOH) you are asked to prepare an action plan to reduce the problem of Dengue in your area.

List and briefly describe the steps of the action plan which you would prepare to reduce Dengue in your area including qualitative and quantitative techniques where relevant. (100 marks)

4. Over the past 10 years the percentage of teenage pregnancies had increased from 10% to 20% in a district in Sri Lanka. A group of researchers wanted to undertake a case control study to identify the risk factors for teenage pregnancies in this district. They planned to recruit teenage mothers admitted for delivery as cases but they could not agree on the most appropriate control group – either (A) primi mothers aged 20 years and above admitted for delivery or (B) non-pregnant teenagers admitted to the medical or surgical wards.

4.1. Discuss the advantages and disadvantages of using ;

(a) Control group A (25 marks)

(b) Control group B (25 marks)

4.2.. List the information needed to calculate the sample size for this study. (20 marks)

4.3. Describe briefly the techniques to deal with confounding in case control studies. (30 marks)