RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES, MIHINTHALE

B.Sc. (General) Degree in Health Promotion
Second Year – Semester I Examination – October/November 2014

HPT 2104 –INTRODUCTION TO EPIDEMIOLOGY

Time: 1 ½ hours

Answer all (03) Questions

1.) **Part A: (20 marks)**

The following table shows the population and mortality data in an urban district in year 2012. Use the details in this table to answer questions given below.

Age groups (years)	Number of Males	Number of females	Total Deaths	Deaths – Heart diseases (Total)	Deaths – Heart diseases (Males)	Deaths – Heart diseases (Females)
0 – 09	11000	14000	200	10	4	6
10-19	13000	17000	350	0	0	0
20-29	11000	16000	420	10	4	6
30-39	10000	15000	200	20	5	15
40-49	8500	13500	200	50	19	31
50-59	11000	16000	350	100	37	63
60-69	14000	17000	450	150	65	85
70-79	9000	10000	900	400	180	220
80+	7000	8000	1200	650	300	350

80+ = more than 80 year

1.1 Calculate the annual mortality rates in 2012 [8 Marks]

a. for male population
b. for female population

1.2 What proportion of deaths in this community is due to heart diseases? [4 Marks]

1.3 Calculate the incidence of deaths due to heart diseases in this urban district in 2012

[8 Marks]

a. among females
b. among males

Part B (10 marks)

1.4 Why is incidence considered as a measure of risk? [5 marks]

1.5 Explain why prevalence is important as a health indicator. [5 marks]

2.) – **[32 Marks]**

The number of birth defects has significantly increased during last few years in some districts of Sri Lanka. A researcher from North Central Province was conducting a study to see whether there is a relationship between exposure to agrochemicals during pregnancy and birth defects (physical or biochemical abnormality at birth). He recorded details of 430 mothers who gave birth to babies with birth defects in hospital. He asked this group of mothers about exposing to agrochemicals during pregnancy and found that 250 of them were exposed to agrochemicals during pregnancy. As a comparison, he also recorded details of mothers who gave birth to healthy babies and found that only 75 of them were exposed to agrochemicals. Now he is planning to use this data to see whether there is a causal relationship between agrochemicals and birth defects.

2.1 What is this study design? [4 Marks]

2.2 Draw a 2 x 2 (contingency) table to include above details. [6 Marks]

2.3 Calculate the **Odds Ratio** of occurring birth defects in these groups. (Show your work).

[6 Marks]

2.4 Based on above calculation, what is your conclusion about the relationship between exposure to agrochemicals and birth defects? [8 Marks]

2.5 Is it possible to calculate relative Risk of developing birth defects in these two groups of mothers using above data? Explain your answer. [8 Marks]

3.) – **[38 marks]**

Explain **Any Four (04)** of following statement with details.

3.1 Randomized controlled trails are considered as the best epidemiology study design to establish causation, Why? [9.5 Marks]

3.2 In a cohort study to see the relationship between physical activity and the risk of diabetes, the exposure group was selected by calling volunteers. The other researchers say that this can cause bias. What is the possible bias here? How could it influence the conclusion of the study? [9.5 Marks]

3.3 Loss to follow-up can be a systematic error in epidemiological studies such as cohort studies. Why? [9.5 Marks]

3.4 Blinding can be used to minimize information bias. Explain. [9.5 Marks]

3.5 A cohort study conducted in Anuradhapura district to assess the relationship between exposure (eating) to tank fish and kidney diseases. The researchers reported that the Odds Ratio (OR) is 1.2 with Confidence Interval (95% CI) (0.75 – 1.35). Does this results show that tank fish is a cause for kidney diseases? Explain your answer. [9.5 Marks]