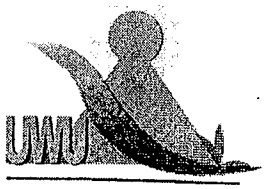
# UvaWellassa University, Sri Lanka
## End Semester Examination-February/March, 2012
## ESS 104-3 Quantitative Reasoning
**Time: Three (03) hours**




**Uva Wellassa University**



**Part B: Essay Questions**

Total Three **(03)** pages

Answer **all** questions

Total Three (03) Questions

Time: One (1) hour and Thirty (30) minutes

Total Marks 50

1. I. Briefly describe **two** types of errors in sampling for surveys, and state how you would reduce them.

II. Consider the following methods for data collection:

***Mail survey, Telephone survey and Personal Interviews.***

What sampling technique do you think

a) Provide the highest response rate?
b) Provide the lowest response rate?
c) Is the most expensive?
d) Is the most suitable for our country? Why?

III. Authorities have decided to use a sample of students to obtain their opinion on an important issue. It is known that the students within the same university hold similar opinions but differ widely from university to university. What type of sampling technique would you use to conduct this survey? And state why you would use that technique?

[20 marks]

2. I. State **two** advantages of organizing data on a frequency distribution.

II. "Charts and Graphs are more effective in attracting attention than any other method representing data" .Do you agree with this statement? Give reasons.

III. The following elements comprise the earth's crust, the outermost solid layer. Illustrate the composition of the earth's crust with a pie graph and interpret the result.

| Elements | Percentage |
|---|---|
| Oxygen | 45.6 |
| Silicon | 27.3 |
| Aluminum | 8.4 |
| Iron | 6.2 |
| Calcium | 4.7 |
| Other | 7.8 |

IV. A safety engineer for the Mars Nuclear power Generating Station has charted the peak reactor temperature each day for the past year and has prepared the following frequency distribution. List and explain any errors you can find from this frequency distribution.

| Temperature in °C | Frequency |
|---|---|
| Below 500 | 4 |
| 501-510 | 7 |
| 511-520 | 32 |
| 521-530 | 59 |
| 530-540 | 2 |
| 551-560 | 65 |
| 561-570 | 33 |
| 571-580 | 28 |
| 580-590 | 27 |
| 591-600 | 23 |
| **Total** | **360** |

[20 mark

3. An analyst in the soft drink industry wants to conduct a statistical test to determine whether there is an association between a person's preference for one of the two commercial brands (Coke and Pepsi) and whether the person drinks regular or diet drinks. A random sample of 190 people is selected, and their responses are presented in the table below.

| | Soft Drink Preference | |
|---|---|---|
| | Coke | Pepsi |
| Diet | 55 | 32 |
| Regular | 60 | 43 |

Conduct a relevant test and state your conclusion (Chi square table value=3.841).

[10 marks]





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