



The Open University of Sri Lanka

B.Sc/B.Ed. DEGREE, CONTINUING EDUCATION PROGRAMME

Open Book Test (OBT) 2015/2016

Level 05 - Applied Mathematics

PCU3141/ PCE5141/ PCU1142/ PCE3142/ PSU1182– Bio Statistics

Date: - 30.04.2016

Time: 10.30 a.m. – 11.30a.m.

Instructions

- This examination is of **One hour** duration.
- Answer **All** questions.
- Each of the two questions is allocated fifty marks.
- Statistical tables are provided.

1. A researcher is interested in estimating the number of seeds that will germinate from a lot of 10000 seeds in packets of 25 seeds in each. The researcher collected a random sample of 40 packets and recorded the number of seeds that germinated from each packet. State whether each of the following statements is true or false. In each case, give reasons for your answer.
 - a) If the researcher had examined all 400 packets, the resulting estimates cannot have non-sampling error.
 - b) The researcher has done stratified sampling with packets defining the strata.
 - c) If 25% of the seeds are new and the rest are outdated, simple random sampling can lead to biased estimates.
 - d) In relation to this study, explain the following terms:
 - i) Random variation
 - ii) Sampling unit

2. State whether each of the following statements is true or false. If the statement is false, clearly explain why it is false.
- a) In an experiment, the scale used to measure the dried weights of the plants had over weighed each observation by 30 milligrams. This error will cause large random variation in the data.
 - b) Systematic sampling can produce biased estimates.
 - c) Collection of data from volunteers to estimate the average time spent on additional reading by students in a class may cause sampling error.
 - d) In a study to estimate the expected dried weight of a medicinal plant at the age of four months the plants were not adequately dried. The resulting error is classified as sampling error.
 - e) In a study to compare the yields of two tomato species, a researcher has recorded the yields from farmers who grow the species of interest. The researcher has conducted an experimental study.

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