Uva Wellassa University

Faculty of Management

Degree of Bachelor of Business Management in Entrepreneurship and Management

3rd YEAR 1st SEMESTER EXAMINATION – MARCH-APRIAL 2013

EMG 334/333-2 Actuarial Statistics- I

PART C

Answer **only two questions** including **first** question.

1. What is the "Probability Proportional to size selection (PPS)".Clearly explain under what circumstances you would consider using PPS sampling. A certain area has 10 Census Blocks(CBs) and each of these CBs have the following number of housing units:67,78,81,26,61,37,51,29,57,48 and 81.Selecte a sample of three CBs using PPS sampling.[Use the following Random Numbers to select the sample [956,867,669,019,643,387,865,477,758,716,709,724].Compute the probabilities of selection of each CB in the study area.

   (30marks)

2. An insurance company sells a number of different policies; among these are 60% for autos, 40% for home owners and 20% are both of these two. Let A_1 be people with only an auto policy, A2 with only home owners, A_3 with both , and A_4 are those with only other types of policies. If a person is selected at random from the policy holders, then $P(A_1)=0.4$,$P(A_2)=0.2$,$P(A_3)=0.2$ and $P(A_4)=0.2$ as these four events are mutually exclusive and exhaustive. Further let B be the event that a policy holder will renew at least one of the auto or home owner policies. Say from past experience we can assign the conditional probabilities $P(B/A_1)=0.6$,$P(B/A_2)=0.7$,and $P(B/A_3)=0.8$.Given that the person selected at random has an auto or homeowner policy, what is the conditional probability that the person will renew at least at one of these policies?

   (20marks)

3. A lot consisting of 100 fuses, is inspected by the following procedure, five fuses are chosen at random and tested. If all 5 below at the correct amperage, the lot is accepted. Suppose that the lot contains 20 defective fuses. What is the probability of accepting the lot?

   (20marks)

(Total-50marks)

10