

UNIVERSITY OF SWAZILAND

DEPARTMENT OF STATISTICS AND DEMOGRAPHY

RE-SIT EXAMINATION 2018

TITLE OF PAPER :INDIRECT TECHNIQUES OF DEMOGRAPHIC ESTIMATION II

COURSE CODE :DEM 314

TIME ALLOWED :TWO (2) HOURS

INSTRUCTIONS :ANSWER ALL QUESTIONS
SHOW ALL YOUR FORMULAE AND WORKINGS
WHERE APPLICABLE.

REQUIREMENTS : CALCULATOR

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

Question 1**[20 marks]**

a. The Brass logit life table system can be expressed mathematically as follows:

$$\lambda(l_x) = \alpha + \beta \lambda(l_x^s)$$

- i. Briefly explain what is meant by the above mathematical expression? [3]
 - ii. Define the parameters alpha (α) and beta (β) in a Brass logit model life table [4]
 - iii. Write down the formula for computing $\lambda(l_x)$. [2]
- b. The values of α and β in the logit model life table are obtained after fitting a straight line in some way.
- i. Give the formulae you would use to obtain the same answers as above for α and β using a calculator [4]
 - ii. Using your formulae in e iii and data given in table below, calculate α and β [4]

age	standard logits	observed logits
1	-1.70593	-2.05952
5	-1.5524	-1.83178
55	-1.05987	-0.95938
65	-0.7579	-0.69315

- i. Give a formula to derive a fitted life table using the parameters derived above [3]

Question 2**[20 marks]**

- a. Describe in detail the characteristics of East, South and North regions of the Coale and Demeny (Princeton) regional model life tables. [12]
- b. Outline two limitations of the Princeton model life tables [4]
- c. The first set of United Nations model life tables were developed using one mortality parameter. Explain two limitations in this procedure to compute the United Nations model life tables. [4]

Question 3

Describe the following TWO indirect demographic estimation methods. Make sure to include only the rationale, data required and assumptions of each method.

- a. Orphanhood method; and [10]
- b. Widowhood method. [10]