UNIVERSITY OF SWAZILAND

DEPARTMENT OF STATISTICS AND DEMOGRAPHY

SUPPLEMENTARY EXAMINATION 2013

TITLE OF PAPER	:	INDIRECT TECHNIQUES OF DEMOGRAPHIC ESTIMATION
COURSE CODE	:	DEM 303
TIME ALLOWED	:	THREE (3) HOURS
INSTRUCTIONS	:	ANSWER QUESTION 1 AND ANY THREE (3) QUESTIONS. ALL QUESTIONS ARE WORTH 20 MARKS.
REQUIREMENTS	:	CALCULATOR

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SECTION A: COMPULSORY QUESTION

QUESTION 1

a. Compare and contrast the merits and demerits of relational model life tables and empirical model life tables? [4]
b. Express the two-parameter Brass logit model life table (MLT) mathematically and define the functions you used. [4]
c. Explain what is meant by the parameters α and β used in the Brass logit MLT and briefly outline two of the methods used to compute these parameters. [6]
d. Give the formulae for computing the logit (lx) and fitted (lx). [4]
e. State any two uses of the Brass logit model life table. [2]

SECTION B: Answer any THREE (3) questions

Question 2

a. Discuss the importance of indirect techniques of estimation in demography. Elaborate your answer with aid of examples. [4]

b. Briefly describe the characteristics of each region of the Coale and Demeny regional model life tables. [12]

c. Explain how you would select a model life table from the Coale and Demeny regional model life tables to use in a specific demographic estimation. [4]

Question 3

Describe any two of the following indirect demographic estimation methods. Make sure to include data requirements and computational procedures of each method.

a. Orphanhood method; [10]

b. Widowhood method; and [10]

c. Brass P/F ratio method. [10]

Question 4

a. What are the assumptions of the Trussell variant of the Brass method for estimating childhood mortality using information from women on the proportion of children dead? [5]

b. You are given data in Table 1 and coefficients in Table 2. Using Trussell variant of the Brass method, calculate q(2) and q(3). [10]

Table 1. Average parity per woman and proportion children dead classified by age group of women

Age group	i	Average parity	Proportion dead
15-19	1	0.156	0.0959
20-24	2	1.326	0.1218
25-29	3	2.765	0.1485

Table 2. Coefficients for estimation of child mortality multipliers, Trussell variant

Age group	i	a(i)	a(i)	c(i)
15-19	1	1.0819	-3.0005	0.8689
20-24	2	1.2846	-0.6181	-0.3024
25-29	3	1.2223	0.0851	-0.4704

Question 5

a) State the assumptions of the widowhood method. [4]

b) What are the advantages of the widowhood method over the orphanhood method? [6]

c) Using the data on the proportion of ever married respondents classified by age given below, calculate the male probability of survival from age 20 to age 35 and from age 20 to 40. [10]

Age	$NW_f(n)$	$NW_f(n-5)$
30	0.9514	0.9729
35	0.9170	0.9514
40	0.8735	0.9170

You may find the following information useful:

n	a(n)	b(n)	c(n)	d(n)
30	-0.0284	-0.00465	-0.00157	1.0822
35	-0.0159	-0.00638	0.00253	1.0831
40	-0.0041	-0.00784	0.00395	1.0596

Assume that SMAM(m)=25.3 years and SMAM(f)=23.2 years.