

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION 2008

TITLE OF PAPER: DEMOGRAPHIC METHODS

COURSE NUMBER: DEM 202

TIME ALLOWED: 3 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS. ALL QUESTIONS ARE WORTH 20 MARKS EACH.

REQUIREMENTS: CALCULATOR

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

Question 1

- (a) Why is it necessary to decompose the difference between two demographic rates? (2)
- (b) Present a formula for computing the “age composition effect” when decomposing the difference between two populations’ crude death rates, and define the components of the formula. (6)
- (c) Using the data provided in Table 1, compare and discuss the death rates for males in Liberia and Italy using the appropriate method of standardization. (12)

Question 2

- a) Distinguish between population projections and estimates. (6)
- b) Describe the uses of population projections. (8)
- c) Given the following life table values, compute:

- a. ${}_5L_{20}$
- b. l_{30}
- c. e_{25} (6 marks)

x	nq_x	l_x	ndx	nL_x	T_x	e_x
20					5,375,000	67
25		75,000	5,000	350,000	5,000,000	
30						

Question 3

- a) Discuss the factors that generally account for sex differentials in mortality. (4)
- b) Use the data below for Country X to answer the following questions:

Data for country X

Number of women 15-49 in 1980	200,000
Population in 1970	1,000,000
Population in 1980	1,200,000
Births in 1970	50,000
Births in 1980	60,000
Deaths in 1970	20,000
Deaths in 1980	18,000
Births between 1970 and 1980	550,000
Deaths between 1970 and 1980	190,000
Girls under age 5 in 1980	200,000
Children under age 5 in 1980	400,000

- (i) Calculate the crude birth rate and crude death rate for 1970 and 1980. (4)
- (ii) What happened to the crude birth rate and crude death rate between 1970 and 1980? (2)
- (iii) Calculate the general fertility rate and the child woman ratio for country X in 1980 (4)
- (iv) Calculate the annual rate of growth of the population between 1970 and 1980. (2)
- c) Why is it necessary to adjust the conventional mortality rate? Explain fully. (4)

Question 4

- a) Describe fully the following:
- Life table as a stationary population. (4)
 - Uses of life tables. (4)
 - Assumptions made in the construction of life table. (4)
- b) Identify the several columns of a conventional life table and explain the meanings of the columns of the life table. (8)

Question 5

- a) Define a cohort and give two examples of cohorts. (4)
- b) Distinguish between period data and cohort data. (4)
- b) Using the data in Table 2 from the 1997 Swaziland Population Census, calculate the following ratios: (8)
 - i) General Sex ratio
 - ii) Age Ratio, if ${}_5P_{x-5}$ is ${}_5P_{10}$ and ${}_5P_{x+5}$ is ${}_5P_{20}$
 - iii) Age Dependency Ratio
 - iv) Child Dependency ratio
- c) Using the information provided below, estimate the Mid-Year Population (July, 11, 1991). (4)

Census 1: July 11, 1986 = 708 455

Census 2: August, 23, 1997= 980 722

Question 6

Use the information given in the table below to calculate:

- a) the in and out migration rates for all regions. (12)
- b) the inter-regional migration rate. (4)
- c) Use the results obtained to discuss the migration pattern in Swaziland in 1966. (4)

Table 3: African Population born in Swaziland by Region of birth and Region of enumeration, 1966

Region of Enumeration	Region of Birth			
	Hhohho	Manzini	Shiselweni	Lubombo
Hhohho	72732	6301	3142	1482
Manzini	6340	72962	7406	2635
Shiselweni	652	1647	87316	732
Lubombo	3779	5372	6843	52098

Table 1: Distribution of the Male Population and deaths by Age, Liberia and Italy, 1974.

Age	Italy Population (000's)	Liberia Population (000's)	Italy Deaths (000's)
0-4	4294.1	263.4	22.14
5-9	4517.1	230.5	1.61
10-14	4592.4	160.4	1.47
15-29	12336.5	401.3	8.40
30-44	10960.8	293.3	17.59
45-59	9571.2	139.2	59.57
60-64	2952.2	29.5	46.36
65+	6890.5	53.9	374.61
Total	56114.8	1571.5	531.75

Table 2: Population by Age Group and Sex, Swaziland, 1997

Age Group	Males	Females	Total
0-4	67 529	68868	136397
5-9	68976	70269	139245
10-14	68200	69287	137487
15-19	54775	57581	112356
20-24	38807	46287	85094
25-29	30147	37896	68043
39-34	21988	30168	52156
35-39	19645	26157	45802
40-44	16165	19340	35505
45-49	14461	15910	30371
50-54	10799	12517	23316
55-59	8758	9162	17920
60-64	6325	7541	13866
65-69	4645	5507	10152
70-74	2924	4377	7301
75-79	2175	3094	5269
80+	2503	4307	6540