UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER 2006

TITLE OF PAPER: **DEMOGRAPHIC METHODS**

COURSE CODE : **DEM 202**

TIME ALLOWED : **THREE (3) HOURS**

INSTRUCTIONS : **ANSWER QUESTION 1 AND ANY OTHER FOUR (4) QUESTIONS.**

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QUESTION 1 (COMPULSORY)

Select the most appropriate answer to the following and justify your choice.

a. If the death rate of a stationary life table population is 10, this implies a life expectancy of about: (i) 65 years; (ii) 50 years; (iii) 100 years; (iv) 10 years

b. The difference between a generation life table and a period life table is that: (i) the radix is different; (ii) one refers to a true birth cohort and the other does not; (iii) one uses a different method for calculating q than the other; (iv) none of the above.

c. The life table mortality rates (qx) are usually (i) about the same as age specific death rates (m_x); (ii) higher than m_x (iii) exactly the same values as m_x; (iv) lower than m_x .

d. If a country A has a higher life expectancy than country B, but A has a higher CDR, it is likely that: (i) A's population is younger than that of B; (ii) A's population is older than that of B; (iii) A's population has a high IMR; (iv) none of the above is probable.

e. In a country with a high life expectancy, the fact that the actual death rate is lower than the death rate of the stationary population means that: (i) the actual population is growing through natural increase; (ii) the country has a younger actual population than the stationary population; (iii) neither of the above is true; (iv) both i and ii are true.

f. A crude rate of natural increase of 30 per thousand leads to a doubling time of the population in approximately: (i) 15 years; (ii) 25 years; (iii) 50 years; (iv) 75 years

g. Typically, age specific fertility rates for women: (i) are highest at ages 15-24 and lower thereafter; (ii) are highest at ages 20-29 and lower at ages 15-19 and at ages over 30; (iii) are highest at ages 25-34 and lowest at ages 15-24 and ages over 35; (iv) are fairly constant throughout the childbearing years.

h. As compared with developing nations, the age structures of the developed nations tend to be unusually favorable to: (i) high CBR and CDR; (ii) low CBR and high CDR; (iii) low CBR and low CDR; (iv) high CBR and low CDR

i. The net reproduction rate is a measure of the: (i) annual excess of births over deaths; (ii) annual rate at which women are replacing themselves on the basis of prevailing fertility and mortality, assuming no migration; (iii) decennial growth rate of the population; (iv) per generation growth rate assuming current age specific and mortality rates and no net migration; (v) none of the above

j. The chief difficulty with the net reproduction rate as a predictive device for population growth is that it: (i) excludes the influence of fertility; (ii) makes inadequate allowance for mortality; (iii) is based on the rates of a single year; (iv) overlooks the type of culture possessed by the population; (v) only includes survivors of births in some past period.

QUESTION 2

a. What is the purpose of standardizing rates? Suppose you were given the choice, which type of standardization do you prefer and why?

b. Calculate the directly standardized death rates, U.S. and Mexico in 1980 from the following data. Comment on your results.

Ages	Mexico Population	Mexico Deaths	US Population	US Deaths
0-14	34,640,000	151,900	49,900,000	64,400
15-44	30,900,000	87,800	105,810,000	157,700
45-64	7,020,000	78,550	43,220,000	425,300
65+	2,440,000	149,150	26,070,000	1,341,800

QUESTION 3

Distinguish fully between the following measures:

a. rate of natural increase and intrinsic growth rate;

b. stationary and stable population;

c. life expectancy at birth and lifespan;

d. migration stream and return migration;

e. generation life tables and conventional life tables

QUESTION 4

Using the information given in Table 1 below:

a. Calculate the in- and out-migration rates for all regions.

b. Calculate the inter-regional migration rate.

c. Use the results obtained above to discuss the migration pattern in Swaziland in 1966.

Table 1: African Population Born in Swaziland by Region of Birth and Region of Enumeration, 1966

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

QUESTION 5

Complete the following life table for Zambia, 1985:

Partial Life Table for Zambia, 1982

Age	nqx	lx	ndx	nLx	Tx	ex
0-1	0.02593	100,000		97815	6989030	69.89
1-4		97407	409	388649		
5-9	0.00240	96998	233		6502566	67.04
10-14	0.00221		214	483342	6018205	
15-19	0.00456	96551	440	481746		57.33

Use this life table to answer the following questions:

a. What is the likelihood that a child in Zambia will survive to age 10?

b. Calculate the percentage of children aged 5-9 who will be alive when they are 15-19 years.

c. Compute the crude death rate.

QUESTION 6

Describe fully the following:

a. Life table as a stationary population;

b. Survival rates and ratios;

c. Abridged life tables vs. complete life tables;

d. The computation of the net reproduction rate;

e. Total fertility rate vs. general fertility rate.

QUESTION 7

a. Defining all symbols, describe briefly the balancing equation which relates the number of people in a population at two time points to another.

b. Suppose there were 100,000 forty year olds in a particular population and that the growth rate of the population in this age group was 3% per annum. Estimate the number of these forty year olds in five years time.

c. What is meant by doubling time? How long would it take a population growing at 2.9% to double in number?

d. Distinguish between a cohort measure and a period measure.