UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER 2017

TITLE OF PAPER	:	**DATA COLLECTION AND ASSESSMENT OF DEMOGRAPHIC DATA**
COURSE CODE	:	**DEM 203 / 213**
TIME ALLOWED	:	**TWO (2) HOURS**
INSTRUCTION	:	**1. ANSWER ANY THREE QUESTIONS.** **2. ALL QUESTIONS ARE WORTH 20 MARKS EACH**
REQUIREMENT	:	**SCIENTIFIC CALCULATOR**

Question 1

a. When evaluating demographic data using the Myer's index, what does an index of 40 mean? [2]

b. Use the data in Table 1 to estimate the Whipple's index at the terminal digit 0 and 5 jointly ($W_{0,5}$), 0 (W_0) and 5 (W_5). Comment on the results [18]

Table 1: South African population aged 20-70 years, 2001 Census

Age	Frequency	Age	Frequency
20	37,547	46	17,141
21	37,603	47	17,076
22	34,180	48	17,030
23	32,002	49	17,370
24	32,934	50	14,657
25	32,658	51	15,341
26	32,535	52	13,639
27	31,061	53	13,120
28	30,151	54	12,183
29	31,358	55	10,831
30	27,367	56	10,360
31	30,137	57	9,523
32	27,425	58	9,632
33	27,543	59	10,502
34	23,801	60	9,425
35	24,899	61	11,487
36	25,610	62	8,767
37	24,810	63	8,113
38	25,437	64	7,341
39	24,382	65	8,189
40	22,009	66	6,668
41	23,238	67	6,460
42	21,068	68	6,269
43	21,472	69	6,155
44	18,692	70	5,518
45	18,454	**Total**	**991,260**

[20 marks]

Question 2

a. Give five special problems of vital registration in developing countries [5]

b. What makes demographers smooth and in some instances decide not to smooth data? [7]

c. Arriaga (1968) put forth the light smoothing formula to smooth demographic data with age misreporting. Expound this technique and give the relevant computational procedure. [8]

[20 marks]

Question 3

a. What are the common errors associated with age data in most countries? [4]

b. The failure to report age is a common and recurring problem in national censuses data with the category of "unknown or not stated" age always included in age distributions. To avoid this category, an arithmetic distribution (pro-rating) of the unknown ages is done.

Given the data in Table 2 based on the Swaziland Population and Housing Census in 1997, pro-rate the not stated category over the adult female population (ages 20 and over) [16]

Table 2: Swaziland Female Population, 1997

Age Group	1997 Female Population
0-4	68,868
5-9	70,269
10-14	69,287
15-19	57,581
20-24	46,287
25-29	37,896
30-34	30,168
35-39	26,157
40-44	19,340
45-49	15,910
50-54	12,517
55-59	9,162
60-64	7,541
65-69	5,507
70-74	4,377
75+	7,131
Not stated	1,566
Total	**489,564**

[20 marks]

Question 4

Using the data in Table 3 based on the Swaziland Population and Housing Census in 2007, calculate the UN joint score index to assess the quality of data and comment on your results

Table 3: Swaziland's Resident Population Distribution by Sex and Age, 2007

Population		
Age	**Male**	**Female**
0-4	63,767	64,092
5-9	67,885	68,420
10-14	67,688	70,541
15-19	60,493	66,203
20-24	48,795	60,150
25-29	39,056	46,641
30-34	29,812	32,685
35-39	24,871	27,477
40-44	18,124	22,356
45-49	15,793	19,028
50-54	12,693	14,267
55-59	10,065	11,043
60-64	7,739	11,113
65-69	6,223	8,558
70+	8,420	14,441
Total	**481,428**	**537, 021**

NB: Age Ratio is defined as:

$$Age\ Ratio: \frac{{}_5P_a}{1/2({}_5P_{a-5} + {}_5P_{a+5})} * 100$$

[20 marks]

Question 5

a. Define age ratios and how they are used to detect possible errors in age data [6]

b. If countries were to suspend the carrying out of national censuses, what data problems would this present? [8]

c. In the evaluation of data and error detection both internal and external consistency checks are employed. Distinguish between these two types of data consistency checks and give at least two relevant examples for each [6]

[20 marks]