

UNIVERSITY OF ESWATINI

RE-SIT EXAMINATION

ACADEMIC YEAR: 2018/19

TITLE OF PAPER: DEMOGRAPHIC METHODS I

COURSE NUMBER: DEM 211

TIME ALLOWED: 2 HOURS

INSTRUCTIONS: ANSWER ANY THREE QUESTIONS. ALL QUESTIONS ARE WORTH 30 MARKS EACH.

REQUIREMENTS: CALCULATOR

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

### Question 1

- a) Define a parity progression ratio and present a formula for its calculation (4)
- b) Use the information in Tables 1 and 2 to answer the following questions:
  - i. Calculate the parity progression ratios. (9)
  - ii. Calculate the cohort total fertility rate using the above calculated parity progression ratios. (3)
  - iii. Calculate the total fertility rate using the age-specific fertility rate approach. (2)
  - iv. If as a result of a family planning campaign, the age-specific fertility rate for the age group 35-39 were reduced by 40%, by what percentage would the fertility rate be reduced? (3)
  - v. Compute the gross reproduction rate, assuming that the sex ratio at birth is 104. (3)

**Table 1: Distribution of women by Number of Children Ever Born, Swaziland 1986**

Number of CEB	Number of Women
0	35,217
1	15,332
2	13,565
3	12,387
4	11,770
5	11,285
6	10,029
7	8,733
8	7,362
9+	5,413

**Table 2: Age Specific Fertility Rates, Swaziland, 1986**

Age	ASFR
15-19	0.169
20-24	0.318
25-29	0.311
30-34	0.264
35-39	0.198
40-44	0.096
45-49	0.014

- c) What is the main difference between the total fertility rate and the gross reproduction rate? (3)
- d) What additional information is needed to compute the net reproduction rate? (3)

## Question 2

- a) Why is it necessary to standardize rates? (2)
- b) The standardized mortality ratio for the town of Burnley in England was 1.23 when the population of England as a whole was used as the standard. What does this tell you about the mortality in Burnley relative to that in England as a whole? (5)
- c) The data in Table 3 refers to the male populations of Argentina and Colombia in the mid-1980s.
  - i. Calculate the crude death rates for each country. (4)
  - ii. Using the population of Argentina as the standard, calculate the directly standardized death rate for Colombia. (10)
  - iii. Comment on your results. (3)

**Table 3: Population (in thousands) and Deaths by age, Argentina and Colombia, mid 1980s**

Age group	Argentina		Colombia	
	Population (thousands)	Deaths	Population (thousands)	Deaths
0-4	1767	11832	1857	5179
5-14	3062	1390	3372	2300
15-24	2430	2816	3123	6646
25-44	4101	9690	3724	12702
45-64	2755	36581	1587	15441
65+	1129	70138	478	27034

- d) What is the purpose of decomposing rates? (2)
- e) The difference in crude death rates for two populations is partly due to differences in two components. Describe the components. (4)

## Question 3

- a) Why do demographers consider the analysis of marriage as important? (5)
- b) Briefly describe how you would compute the mean age at first marriage, mentioning the data that are needed. (6)
- c) Populations that have a low age at first marriage tend to have relatively higher levels of fertility. Discuss this statement. (5)
- d) Provide the formula for computing the singulate mean age at marriage, defining all the components of the formula. (8)
- e) Calculate the singulate mean age at marriage for males and females in Mali using the data in Table 4. (6)

**Table 4: Proportion single by age and sex, Mali, 1995-96**

Age	Males	Females
15-19	99.6	98.6
20-24	89.1	77.7
25-29	58.6	42.9
30-34	33.2	21.7
35-39	20.8	12.5
40-44	13.7	8.4
45-49	10.9	6.5
50-54	10.0	7.0

**Question 4**

- a) Define the following terms:
  - i. Foetal Death (2)
  - ii. Morbidity (2)
  - iii. Prevalence (2)
  - iv. Fecundability (2)
  - v. Live birth (2)
  
- b) Describe as clearly as you can the cohort method for adjusting the conventional infant mortality rate, giving the relevant formula as well. (6)
  
- c) If a depressed person jumps off a bridge and drowns, what will be the single cause of death recorded in vital statistics? (2)
  
- d) The table below gives the number of births, deaths of infants under 1 year and deaths of infants under 28 days (4 weeks) in the UK in selected calendar years.
  - i. Calculate the percentage of infant deaths in each year that were neonatal deaths.(4)
  - ii. Calculate the infant and neonatal mortality rates for each year .(8)

**Table 5: Number of births and infant deaths, United Kingdom, selected years**

Year	Number of births	Number of deaths under 1	Number of deaths under 28 days old
1991	792500	5820	3460
1995	732000	4520	3070