



# MURANG'A UNIVERSITY OF TECHNOLOGY

## SCHOOL OF PURE AND APPLIED SCIENCE

DEPARTMENT OF APPLIED SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2017/2018 ACADEMIC YEAR

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF  
BACHELOR OF SCIENCE IN APPLIED STATISTICS WITH PROGRAMMING**

AMS 211 – DEMOGRAPHY & SOCIAL STATISTICS

DURATION: 2 HOURS

DATE: 20<sup>TH</sup> APRIL, 2018

TIME: 9.00 – 11.00 A.M.

### **Instructions to Candidates:**

1. Answer **Question 1** and **Any Other Two** questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

## SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION

### QUESTION ONE

- a) Define the term demography as used in demographic studies (2 marks)
- b) Briefly describe four main uses of demography (4 marks)
- c) Differentiate between the following:
- i. Crude death rate and specific death rate (2 marks)
  - ii. General fertility rate and total fertility rate (2 marks)
  - iii. Direct and indirect standardization (2 marks)
- d) Outline five factors that contribute to increase in material mortality in developing countries (5 marks)
- e) The following table shows data on mortality

	LOCATION A		LOCATION B	
Age Group	Standard population	Population Deaths	Local Population	Population deaths
Under 5	4500	135	4000	144
5 – 15	10000	40	10500	63
15 – 65	12500	75	13500	81
Above 65	3000	140	2000	102

- Which of the two locations is in your opinion healthier? (6 marks)
- f) A census can be carried out de jure or de facto. Explain (2 marks)
- g) List any five problems with ‘cause of death data’ (5 marks)

## SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

### QUESTION TWO

- a) Explain what you understand by the term vital registration and highlight five uses of vital statistics (6marks)
- b) Discuss demographic transition theory (10 marks)
- c) Define a life table and list three uses of a life table (4 marks)

### QUESTION THREE

a) Briefly explain the following terms

- i. Fertility
- ii. Mortality
- iii. Nuptiality

(3 marks)

b) Consider the table below

Age	Number of women	Number of births	Number of female births
15-19	200	20	9
20-24	300	80	35
25-29	300	100	45
30-34	400	80	35
35-39	400	20	9

Assuming that the total population is 6000. Calculate

- i. CBR (Crude Birth Rate)
- ii. GFR (General Fertility Rate)
- iii. GRR (General Reproduction Rate)
- iv. TFR (Total Fertility Rate)
- v. NRR (Net Reproduction Rate)

(10 marks)

c) State and explain five factors affecting mortality

(5 marks)

d) Differentiate between a rate and a ratio as used in demographic techniques

(2 marks)

### QUESTION FOUR

a) Define the term census

(2 marks)

b) Outline any five essential features of census

(5 marks)

c) List five disadvantages of carrying out a census

(5 marks)

d) Use the following data to calculate directly or indirectly crude death rate for population one (1) and population two (2) using standard population

Age Group	Population 1		Population 2		Standard Population	
	Rate	Proportion	Rate	Proportion	Rate	Proportion
1	30	0.8	32	0.3	20	0.6
2	15	0.2	16	0.7	35	0.4

(8 marks)

**QUESTION FIVE**

- a) Calculate age specific fertility rate per 1000 women in the following age groups and hence find the total fertility rate per 1000 for five year age groups

Age group of Mother	15-19	20-24	25-29	30-34	35-39	40-44
Births (Ba)	43807	257872	236088	115566	38450	6627
Women (Wa)	1230396	1390077	1653183	1608925	1241067	941973

- b) Fill in the remaining gaps in the following life table where the radix is 97340 (5 marks)

Age(x)	qx	lx	px	dx
30	0.02239	100000	-	-
31	0.00181	-	0.99819	-
32	0.00120	97581	-	-
33	0.00090	-	-	-
34	0.00066	-	-	-
35	0.00058	97315	0.99942	56

(4 marks)

- i. What proportion of males aged 31 are expected to live to age 35? (2 marks)
  - ii. Out of 2000 males aged 31, how many will die after 35 years? (2 marks)
  - iii. What is the average number of males who might be expected to die between the ages 31 to 35 out of 3000 males now aged 30? (3 marks)
- c) State and explain two types of infant mortality (4 marks)