

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY
SCHOOL OF HEALTH SCIENCES

MPH

END SEMESTER EXAMINATION

HES 5112: DEMOGRAPHY AND HEALTH

December 2013

TIME ALLOWED: 2 hours 30 minutes.

Note: Answer question one and any other three questions

QUESTION 1 (COMPULSORY)

The table below shows data from the Ukraine in 1984.

Age group	Births	Women (15 – 49yrs)	ASFR
15 – 19	43,807	1,230,396	
20 – 24	257,872	1,390,077	
25 – 29	236,088	1,653,188	
30 – 34	115,566	1,608,925	
35 – 39	38,450	1,241,967	
40 – 44	6,627	941,963	
45 – 49	1,600	630,000	

- a) Briefly, explain the meaning of “Fertility” in demography. **(2 marks)**
- b) Use the tabulated data to calculate the General Fertility Rate (GFR) per 1,000 women aged 15 – 49. **(3 marks)**
- c) Use the tabulated data to calculate the Age-Specific Fertility Rate (ASFR) per 1,000 women for each of the age groups and populate the ASFR column. **(7 marks)**
- d) Use the data in the table to calculate the Total Fertility Rate (TFR) per 1,000 women in in the Ukraine in 1984. **(3 marks)**

QUESTION 2

- a) In demography, are “Late Fetal Deaths” counted in terms of birth and death events? Briefly, explain your answer. **(2 marks)**
- b) State the most commonly used definition of maternal mortality. **(2 marks)**
- c) Distinguish between Maternal Mortality **Ratio** and **Rate**. **(2 marks)**
- d) Calculate the maternal mortality *ratio* and *rate* for Egypt in (1990), based on the following data: Egypt, 1990 Births = 4,158,212; Maternal deaths = 343; Women aged 15-49 years = 65,624. **(5 marks)**
- e) List two methods used to derive the probability of dying “q” from mortality rates. **(2 marks)**
- f) List two socio-economic characteristics of a population that may be associated with differential mortality. **(2 marks)**

QUESTION 3

- a) Briefly, distinguish between the following:
 - i. In-migrant and Immigrant **(2 marks)**
 - ii. Out-migrant and Emigrant **(2 marks)**
 - iii. Residual method and Cohort-Component method **(2 marks)**
- b) List three techniques of estimating net migration using the Cohort-Component method. **(3 marks)**
- c) Calculate the Crude Net Migration Rate per 1,000 for Tanzania in 1987 based on the following data: Long-term immigrants = 3,925; Long-term emigrants = 5,330; Total population = 8,640,000. **(4 marks)**
- d) List the two broad types of migration. **(2 marks)**

QUESTION 4

- a) List two of the most important sources of country level demographic data. **(2 marks)**
- b) Briefly, distinguish between the following:
 - a. *De jure* and *De facto* census **(2 marks)**
 - b. Rate and Ratio **(2 marks)**
- c) Infant mortality may be defined as the number of infant deaths in a given year divided by the number of live births in that given year. Is it a true rate as defined? Briefly, explain your answer. **(3 marks)**
- d) Given the following births and infant deaths recorded in Korea in 1967 and 1968:

Year	Birth Cohort	Age (yrs)	Deaths	Births
1967	1967	0	2,893	142,471
1968	1967	0	481	--
1968	1968	0	2,603	138,214
1969	1968	0	302	--

- i. Calculate the correct conventional infant mortality rate per 1,000 for 1967 (show your work). **(3 marks)**
- ii. Calculate the correct conventional infant mortality rate per 1,000 for 1968 (show your work). **(3 marks)**

QUESTION 5

- a) Briefly, explain what a “Lexis Diagram” is used for in demography. **(4 marks)**
- b) Briefly, describe how a single life and a cohort of lives are represented on a Lexis diagram (show diagram). **(6 marks)**
- c) Suppose there were 1000 births in 1995 in a given community and of these 90 died before Jan. 1, 1996 and 50 died after Jan. 1, 1996 but before reaching their first birthday. Calculate the cohort probability of death per 1,000 before age 1 (Draw a Lexis diagram to represent the data)? **(5 marks)**

QUESTION 6

Using the abridged life table for England and Wales females 1985 (below), obtain the following:

- a) Value of the Radix =? **(3 marks)**
- b) Conditional probability of dying in the interval [10 , 14)], given survival to age 10 **(3 marks)**
- c) Number of survivors at exact age 20 (their 20th birthday) **(3 marks)**
- d) Number of deaths to the Radix between exact ages [40 , 44] **(3 marks)**.
- e) Life expectancy at age 5. **(3 marks)**

Abridged life table: England and Wales, females, 1985

X	N	nq_x	np_x	l_x	$n d_x$	nL_x	T_x	e_x
0	1	0.008252	0.991748	100 000	825	99 258	7 756 261	77.563
1	4	0.001630	0.998370	99 175	162	396 311	7 657 003	77.207
5	5	0.000905	0.999095	99 013	89	494 842	7 260 692	73.331
10	5	0.000935	0.999065	98 924	93	494 388	6 765 850	68.394
15	5	0.001409	0.998591	98 831	139	493 808	6 271 462	63.456
20	5	0.001534	0.998466	98 692	152	493 080	5 777 654	58.542
25	5	0.001818	0.998182	98 540	179	492 253	5 284 574	53.629
30	5	0.002826	0.997174	98 361	278	491 110	4 792 321	48.722
35	5	0.004410	0.995590	98 083	432	489 335	4 301 211	43.853
40	5	0.007199	0.992801	97 651	693	486 523	3 811 876	39.036
45	5	0.012348	0.987652	96 958	1 197	481 798	3 325 353	34.297
50	5	0.020831	0.979169	95 761	2 005	473 793	2 843 555	29.694
55	5	0.035455	0.964545	93 756	3 324	460 470	2 369 762	25.276
60	5	0.058507	0.941493	90 432	5 291	438 933	1 909 292	21.113
65	5	0.087310	0.912690	85 141	7 434	407 120	1 470 359	17.270
70	5	0.139189	0.860811	77 707	10 816	361 495	1 063 239	13.683
75	5	0.220993	0.779007	66 891	14 782	297 500	701 744	10.492
80	5	0.352367	0.647633	52 109	18 362	214 640	404 244	7.758
85+		1.000000	0.000000	33 747	33 747	189 604	189 604	5.618