



DEPARTMENT OF DEMOGRAPHY AND SOCIAL STATISTICS
 OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE

DSS 401 Examination

Harmattan semester 2010/2011

INSTRUCTION: Answer all the questions in section A and any two questions in section B
TIME ALLOWED: 2 hours

Registration number/Name.....

SECTION A Answer all questions

1. What are demographic models? Briefly discuss the types of demographic models that you know giving examples of each.
2. Briefly highlight the basic features and shortcomings of the United Nations model life tables
3. Why should demographic data be appraised? List the types of testing procedures that you know.
4. State four factors that are likely to affect death registration.
5. Mention two ways by which registration of births can be improved
6. Describe the mortality pattern of the East and South Regional model life tables
7. State the underlying assumptions of fertility and nuptiality models
8. What is the relationship between r and R_0 ?
9. Differentiate between gross reproduction rate and net reproduction rate
10. Briefly explain the purpose(s) of a model life table
11. Briefly define the following i) reproduction survival ratio ii) mean length of generation iii) intrinsic rate of growth iv) singulate mean age at marriage

SECTION B Answer any two questions

1. Construct the Nuptiality model proposed by Coale for Nigeria and Ghana, given the singulate mean age at marriage of 18.6 years and 17.5 years for Nigeria and Ghana respectively, and the percentage ever married by age 50 for the two countries to be 80%. Find the values of Θ , $U_{(w)}$, λ and $g(15)$, $g(20)$ and $g(25)$ for the two countries, assuming age at first marriage of 12 years for Nigeria and 13 years for Ghana. Plot the values for the two countries by age and comment on the model distribution of marriage rate in the population.
2. i.) Briefly explain the Coale and Demeny regional model life tables. What advantages do they have over the UN model life tables?
 ii) The data below is for the female population of a Western country in Europe. Compute the following using Lotka's formula

$$r = \frac{\frac{R_1}{R_0} - \sqrt{\left(\frac{R_1}{R_0}\right)^2 - 2 \left[\frac{R_2}{R_0} - \left(\frac{R_1}{R_0}\right)^2\right] \ln R_0}}{\frac{R_2}{R_0} - \left(\frac{R_1}{R_0}\right)^2}$$

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- i. the first moment
- ii. the second moment
- iii. the intrinsic growth rate
- iv. the mean length of generation
- v. reproduction survival ratio

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| Age of mother | Age specific birth rate (female births) | Life table survival rate |
|---------------|---|--------------------------|
| 15-19 | 0.036 | 0.9975 |
| 20-24 | 0.034 | 0.98985 |
| 25-29 | 0.0567 | 0.98792 |
| 30-34 | 0.057 | 0.98566 |
| 35-39 | 0.0211 | 0.98261 |
| 40-44 | 0.0037 | 0.97526 |
| 45-49 | 0.0013 | 0.97152 |

3. The distribution of the male population of Lagos State, Nigeria as reported by the 2006 National Population and Housing census by 5 year age groups is presented below.

| Age group | Population | Proportion |
|-----------|------------|------------|
| 0-4 | 578,106 | 12.7 |
| 5-9 | 480,544 | 10.2 |
| 10-14 | 409,521 | 8.7 |
| 15-19 | 422,556 | 9.0 |
| 20-24 | 554,287 | 11.7 |
| 25-29 | 577,106 | 12.2 |
| 30-34 | 448,735 | 9.5 |
| 35-39 | 363,326 | 7.7 |
| 40-44 | 266,841 | 5.6 |
| 45-49 | 208,720 | 4.4 |
| 50-54 | 145,273 | 3.1 |
| 55-59 | 95,881 | 2.0 |
| 60-64 | 65,523 | 1.4 |
| 65-69 | 38,778 | 0.8 |
| 70-74 | 26,301 | 0.6 |

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Using the Sprague multiplier approach, smooth the population for the following age groups (use the table provided)

- i. 0-4
- ii. 5-9
- iii. 30-34
- iv. 70-74

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