COVENANT UNIVERSITY
NIGERIA

TUTORIAL KIT
OMEGA SEMESTER

PROGRAMME:
DEMOGRAPHY AND SOCIAL STATISTICS

COURSE: DSS 421

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DSS 421
DEMOGRAPHIC ESTIMATION

BT
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QUESTIONS

1a) Define the concept of Parity?
1b) Mention and explain types of parity you know.

2) Define the following and state their differences
   i.) Total Fertility Rate (TFR)
   ii.) Completed Fertility Rate (CFR)
   iii.) Cumulative Fertility Rate (CFR)

3) From the table below estimate the mean age of child bearing

Age Group	**ASFR**	**X'**	**X'ASFR**	**i**
15-19	0.0124			
20-24	0.1809			
25-29	0.2031			
30-34	0.1946			
35-39	0.0914			
40-44	0.0685			
45-49	0.0315			

4.) Using the information below, calculate the completed and cumulative fertility rate for women in Birth Cohort 1977-1978

	1992	**1993**	**1994**	**1995**	**1996**	**Birth Cohorts**
14	7.9	8.0	8.0	7.6	7.0	1981-82
15	20.9	20.8	20.7	19.8	18.4	1980-81
16	38.9	38.8	38.5	37.1	34.7	1979-80
17	61.7	61.1	60.8	58.9	55.7	1978-79
18	85.6	84.4	83.8	81.6	78.3	1977-78
	-	-	-	-	-	1976-77
	-	-	-	-	-	75-76
	-	-	-	-	-	74-75
	-	-	-	-	-	73-74

5a) What do you understand by interpolation?
5b) State the procedure for estimating interpolation.

6) What is the value of e^0_{65} at mortality level 9 for males and females combined in the table below? (***Assume sex ratio at birth of 1.05 to this population***).

		T_{65}	l_{65}
1.	Females, level 9	310, 849	29,435
2.	Males, level 9	230, 844	23,922
3.	Males, level 9 adjusted		
4.	Males and Female level 9, adjusted		

7) If $2q_0$, that is proportion of dying under-age 2 which estimated at 0.270 ($2q_0 = 0.270$) for males and females combined what is the implied level of mortality?

8) Describe with examples methods of adjusting the stable estimates of fertility when the average growth rate is used in combination with the age structure.

9a) What do you understand by population projection?
9b) Briefly explain the types of estimates that you know.

10.) Explain with examples **FIVE** uses of projection to Demographers.

11.) Discuss the use of stable population in estimating vital rates.

12.) Clearly define and discuss the following methods of correcting mortality decline:
i. Coale-Demeny Method
ii. Zechariah Method
iii. The new method

13a) Define the concept of projection period.
13b) What are the basic assumptions of projections?

14.) Discuss the frequency and nature national projection.

15.) Suppose at the base period (year Po with a population of 255.6 million and the rate of increase 2.3% per annum. What will be the population size 10 year after?

16.) What are the methods used in projection methodology? Discuss accordingly with examples.
17.) When working demographic models what are those vital points that must be noted?

The table below represent the Peru 1961 Census for Women Data. Using the information provided answer the following questions.

Age of Mothers (x to x+5)	Annual births of daughters per female (1)	Central age ($x + 2^1/_2$) (2)	$\frac{L^f_x}{l_0}$ (3)	Zero moment (R_0)	First Moment (R_1)	Second Moment (R_2)
15-19	0.03888		3.88727			
20-24	0.11341		3.79787			
25-29	0.12000		3.68824			
30-34	0.09856		3.57334			
35-39	0.07482		3.45368			
40-44	0.03378		3.32597			
45-49	0.01096		3.17970			
Total	**0.49041**		**1.78224**			

18.) Calculate the intrinsic rate of increase (r) for Peru in year 1961

19) Estimate the value of "T", using the values computed from Peru census 1961.
(Note: $T = \alpha + {}^1/_2\ \beta r$)

20a) What are Demographic models?
20b) Mention and explain types of demographic models that you.

ANSWERS

1a) Parity refers to the number of children previously born alive to a woman. The distribution of all women by parity at a particular age or age range at a date is derived from cumulative fertility rates by live birth order and exact age of mother, for women in single- year birth cohort or groups of birth cohort at a particular date.

1b) **Types of Parity**

- Zero-parity women are those who have never had child.
- One-parity women are women who had only one child.
- Two-parity women will have only two children.

2) **Differences**

The total fertility rate is a current rate. That is, it is based on ASFR collected in a calendar year. It is a summary measure of current total fertility and it involves groups of women from different cohort. The completed fertility and cumulative fertility rate are cohort fertility measures. If a birth cohort of female children is followed through the child bearing period, the age specific birth rates for successive single ages, for instance from age 14 on in successive years can be combined to derive cumulative rates per thousand women to any given year for the cohort.

3)

Age Group	**ASFR**	**X'**	**X'ASFR**	**i**
15-19	0.0124	17.5	0.217	1
20-24	0.1809	22.5	4.07025	2
25-29	0.2031	27.5	5.58525	3
30-34	0.1946	32.5	6.3245	4
35-39	0.0914	37.5	3.4275	5
40-44	0.0685	42.5	2.91125	6
45-49	0.0315	47.5	1.49625	7
Total		**0.7824**	**24.032**	

Mean age of childbearing = $\frac{\Sigma X'ASFR}{\Sigma X'}$

$$= \frac{24.032}{0.7824} = 30.7157 \sim 31 \text{ years}$$

4) Cumulative fertility is derived as:

$= f_{14}^{1992} + f_{15}^{1992} + f_{16}^{1992} + f_{17}^{1992} + f_{18}^{1992}$

$= 7.9 + 20.8 + 38.5 + 58.9 + 78.3$

$= 204.4$

13a) Projection period may vary by length of years depending on the area in question. The need to meet, the conception of the problem by the analyst and the available resources. The period could be for 10, 20, 25, 50, 100 years.

13b) **Basic Assumptions of Projections**

Usually publications on projections start with a statement assuming that the area will not be visited by war or natural disaster. No allowance is made for future economic fluctuation of cyclical nature. Some report assumes continuation of conditions of nearly full employment or an assumed in GNP at a given %.

Due to uncertainty regarding future population changes it is necessary to present more than one series of projection in the case of both national projections and sub-national projections. This may take the form of combination of multiple assumptions concerning one or more of the components of population changes. e.g. high, medium, low assumptions of fertility; and mortality. High may denote constant fertility e.g. 5.2 and mortality or all may call for a decline e.g. high for a decline of 5%, medium for 10% and low for 15%. And variations may relate only to the date of sets or the rate of decline.