

COVENANT UNIVERSITY

TUTORIAL KIT

PROGRAMME: ACCOUNTING

ALPHA SEMESTER

400 LEVEL



Raising A New Generation Of Leaders

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COVENANT UNIVERSITY

CANAANLAND, KM 10, IDIROKO ROAD

P.M.B 1023, OTA, OGUN STATE, NIGERIA

TITLE OF EXAMINATION: B.SC EXAMINATION

COLLEGE: COLLEGE OF BUSINESS STUDIES

SCHOOL: SCHOOL OF SOCIAL SCIENCE

DEPARTMENT: ECONS & DEV. STUDIES

SESSION: 2014/2015 CREDIT UNIT: 2

COURSE CODE:DSS 411

SEMESTER: ALPHA

COURSE TITLE: Demographic Data Evaluation

Instruction: Answer Question 1 and any other TWO questions

Question 1

- a.) What is Data Evaluation in the field of Demography? (2 marks)
- b.) Why do we need to evaluate data before using them? (2 marks)
- c.) what are those methods used for evaluation? (4 marks)
- c.) Identify the types and reasons for errors in age-sex data that you know. (6 marks)
- d.) Apply the Whipple's and UN Age-sex accuracy index to check for the extent of errors in the dataset below and interpret your results accordingly: (16 marks)

(Note: You are expected to check for the extent of errors only for the female population when applying the Whipple's index)

NDHS 2013: HOUSEHOLD AGE DISTRIBUTION											
Age	Male	Female	Age	Male	Female	Age	Male	Female	Age	Male	Female
0	3030	3134	19	961	1154	38	648	933	57	326	279
1	3029	2881	20	2118	2558	39	808	518	58	378	368
2	2940	2831	21	833	912	40	449	1745	59	217	149
3	3143	3112	22	1134	1420	41	1917	339	60	1095	1025
4	3045	2992	23	970	1141	42	347	720	61	164	131
5	2762	2644	24	759	940	43	713	496	62	374	302
6	3375	3157	25	2039	2680	44	459	321	63	199	185
7	3041	3083	26	801	1110	45	322	1228	64	130	122
8	3147	3194	27	1017	1205	46	1432	377	65	674	549
9	2263	2187	28	1188	1583	47	356	368	66	105	92
10	3186	3023	29	671	841	48	421	703	67	163	135
11	1580	1616	30	2375	2708	49	649	630	68	226	230
12	2538	2491	31	592	540	50	513	789	69	98	89
13	2095	2175	32	1018	1073	51	796	328	70+	2654	2018
14	1624	1335	33	647	716	52	198	769			
15	1958	2050	34	501	555	53	544	607			
16	1415	1509	35	2071	2087	54	441	417			
17	1428	1438	36	572	676	55	313	882			
18	1763	1904	37	648	618	56	864	389			

(Sub-total = 30 marks)

QUESTION 2

- Re-arrange and classify under appropriate headings the following, based on the type of measures of fertility each stand for: CBR, CEB, GFR, CWR, NRR, GRR, ASFR, and TFR. **($\frac{1}{2}$ mark each = 4 marks)**
- Identify the data requirements and limitations of CBR, GFR, CWR, TFR and GRR as measures of fertility. **(2 marks each = 10 marks)**
- Briefly explain with relevant examples the following terms: i.) Fertility ii.) Fecundity iii.) Fecundability iv.) Gravity v.) Sterility **(6 marks)**

(Sub-total = 20 marks)

QUESTION 3

- What is Replacement level fertility? **(5 marks)**
- Use the data below to estimate the following measures of fertility and interpret your estimates accordingly: a.) CBR b.) GFR c.) ASFR d.) TFR e.) GRR

Age Group	Total Population	Male Population	Births
15-19	21,220	10,805	768

20-24	21,523	10,849	1990
25-29	19,626	9,801	2505
30-34	17,626	8,741	1867
35-39	14,008	6,904	1025
40-44	11,687	5,726	567
45-49	11,094	5,393	105

(15 marks)

(Sub-total = 20 marks)

QUESTION 4

- a.) What is Life Table? (2 marks)
- b.) Mention any five functions of a conventional Life Table and how they are derived. (5 marks)
- c.) Complete the table below:

Age	lx	Age	lx	Age	lx
0	100,000	30	96951	65	81393
1	98481	35	96450	70	74296
5	98224	40	96035	75	63693
10	98076	45	94839	80	49263
15	97938	50	93039	85+	32697
20	97663	55	90458		
25	97332	60	86716		

(13 marks)

(Sub-total = 20 marks)

QUESTION 5

- a.) Suppose there are two populations (A and B), which are currently of equal size and have a growing constant rate of 0.01 and 0.02 respectively. If these rates persist into the future, what will be the ratio of the population size of A relative to B in 30 years? (5 marks)
- b.) In 2002 the life expectancy at birth for Thailand was 87 years. In not more than two sentences, explain what this means in a language a layman will understand. (5 marks)
- c.) What do you understand by the assumption of rectangularity? (5 marks)
- d.) Mention and explain with relevant examples types of Life Table that you know. (5 marks)

(Sub-total = 20 marks)

Marking Guide

Question 1a

Data evaluation is the assessment of the quality of the data. In evaluating the data, sometimes it is adjusted in order to ensure that it is of an acceptable standard. **(2 marks)**

Question 1b

Demographic data are usually classified by age and sex. Despite this importance; a variety of irregularities and misstatements have been noted with respect to age-related data. These irregularities must be detected, adjusted or corrected before demographic data could be used for any meaningful analysis. **(2 marks)**

Question 1c

During enumeration, checks and controls are instituted to minimize errors in the census. Despite instituting data control measures, there are usually several errors in the census data. For instance, some people may be completely omitted, others may be enumerated more than once, or some characteristics of an individual such as age, sex, fertility and economic activity of the canvassed individual may be incorrectly reported or tabulated. In general, two approaches are used to evaluate the quality of data, direct and indirect methods.

Direct Method

The direct method basically involves the carrying out of what is referred to as a Post Enumeration Survey (PES). In a PES, a sample of households is revisited after the census and data are again collected but on a smaller scale and later compared with that collected during the actual census. The matching process of the two sets of data can then be used to evaluate the quality of the census data. **(2 marks)**

Indirect Method

Indirect methods usually employ the comparison of data using both internal and external consistency checks. Internal consistency checks compare relationships of data within the same census data, whereas external consistency checks compare census data with data generated from other sources. For instance, one can compare data on education obtained during a census with administrative data maintained by the Ministry of Education.

(2 marks)

Question 1d

- i.) **Content Error:** Mistake made in the recorded information in the census questionnaire either by the respondent or by the interviewer. This can be further divided into 4 categories; response error; enumerator's error; coding error and data error. (1½ marks)
- ii.) **Coverage Error:** Under or over-enumeration in a population census due to either omission or duplication. This occur when the whole or individuals within the household are not enumerated, also when not all events are recorded or less often in which households, individuals or events are counted more than once. It can also arise due to faulty administrative control procedures e.g. completed record can be lost or misfiled at any stage of data processing. (1½ marks)

Reasons for Errors in Age-sex Data

1. Digital preference or aversion
 2. Deliberate misstatement
 3. Ignorance of correct age
- (1 mark each = 3 marks)

Question 1e

a.) Whipple's Index Estimation for Women data

For terminal digit "0"

$$= \frac{(P_{30} + P_{40} + P_{50} + P_{60})}{\frac{1}{10} (P_{23} + P_{24} + P_{25} + \dots + P_{62})} \times 100$$

$$= \frac{6267}{\frac{1}{10} (33,286)} \times 100 = 188.28 \text{ (1 mark)}$$

Interpretation

The index for terminal digit "0" is above 175, which means that the age data is very rough. That is, there is high preference for ages ending in terminal digit "0" by women in the NDHS household data for 2013. (1 mark)

For terminal digit "5"

$$= \frac{(P_{25} + P_{35} + P_{45} + P_{55})}{\frac{1}{10} (P_{23} + P_{24} + P_{25} + \dots + P_{62})} \times 100$$

$$= \frac{6877}{\frac{1}{10} (33,286)} \times 100 = 206.60 \quad \text{(1 mark)}$$

Interpretation

The index for terminal digit "5" is above 175, which means that the age data is very rough. That is, there is high preference for ages ending in terminal digit "5" by women in the NDHS household data for 2013. (1 mark)

For terminal digit "0 and 5"

$$= \frac{(P_{25} + P_{30} + P_{35} + P_{40} + P_{45} + P_{50} + P_{55} + P_{60})}{\frac{1}{10} (P_{23} + P_{24} + P_{25} + \dots + P_{62})} \times 100$$

$$= \frac{13144}{1/5 (33,286)} \times 100 = 197.44 \quad (1 \text{ mark})$$

Interpretation

The index for terminal digit “0 and 5” is above 175, which means that the age data is very rough. That is, there is high preference for ages ending in terminal digit “0 and 5” by women in the NDHS household data for 2013. **(1 mark)**

UN AGE-SEX ACCURACY INDEX

Age Group	Male Pop	Female Pop	Sex Ratio	Sex Ratio Diff	Male Age Ratio	Dev. From 100%	Female Age Ratio	Dev. From 100%
0-4	15187	14950	101.59	-	-	-		
5-9	14588	14265	102.26	-0.67	111.32	11.32	111.49	11.49
10-14	11023	10640	103.60	-1.34	99.70	-0.3	95.34	-4.66
15-19	7525	8055	93.42	10.18	89.39	-10.61	91.48	-8.52
20-24	5814	6971	83.40	10.02	87.82	-12.18	90.10	-9.9
25-29	5716	7419	77.05	6.35	104.43	4.43	118.11	18.11
30-34	5133	5592	91.79	-14.74	98.12	-1.88	91.29	-8.71
35-39	4747	4832	98.24	-6.45	105.28	5.28	104.90	4.90
40-44	3885	3621	107.29	-9.05	98.02	-1.98	88.99	-11.01
45-49	3180	3306	96.19	11.1	99.73	-0.27	101.24	1.24
50-54	2492	2910	85.64	10.55	94.43	-5.57	108.32	8.32
55-59	2098	2067	101.50	-15.86	94.21	-5.79	88.43	-11.57
60-64	1962	1765	111.16	-9.66	116.65	16.65	111.64	11.64
65-69	1266	1095	115.62	-4.46	54.85	-45.15	57.89	-42.11
70+	2654	2018	131.52	-15.9	-	-	-	-
Total				126.33		121.41		152.18
Mean				9.02		9.34		11.71

(8 marks)

UN- Index = 3 mean diff. of SR + MASR_m + MASR_f
 $= 3(9.02) + 9.34 + 11.71 = 48.11 \quad (1 \text{ marks})$

Interpretation

The UN Age-sex index is above 40, that means the data is highly inaccurate. That is, there exist high level of digital preference in the age-sex data. **(1 mark)**

Sub-total = 30 marks

Question 2a

- i.) **Crude Indicators of Fertility:** CBR, GFR, CWR
- ii.) **Age Adjusted Indicators of Fertility:** ASFR, TFR, CEB
- iii.) **Indicators of Reproduction:** GRR, NRR

(1/2 mark each = 4

marks)

Question 2b

Note: 1 mark for data requirement and 1 mark for limitation, in total 2 marks for each

(i.) **Crude Birth Rate:** This is the number of live births per 1,000 population in a given year.

$$\text{CBR} = \frac{\text{Number of births}}{\text{Total population}} \times 1,000$$

Data Requirements and Limitations

1. Need a complete and accurate vital registration system.
2. Only a crude estimate of fertility.
3. All the population included in the denominator is not exposed to the risk of pregnancy.
4. Not good for comparing fertility across populations, as variations in age distribution of the populations being compared will affect the birth rate. **(2 marks)**

(ii.) General Fertility Rate: The general fertility rate (also called the fertility rate) is the number of live births per 1,000 women ages 15-49 in a given year.* The general fertility rate is a somewhat more refined measure than the birth rate because it relates births to the age-sex group at risk of giving birth (usually defined as women ages 15-49). This refinement helps eliminate distortions that might arise because of different age and sex distributions among populations. Thus, the general fertility rate is a better basis to compare fertility levels among populations than are changes in the crude birth rate.

$$\text{GFR} = \frac{\text{Number of births/year}}{\text{Number of women ages 15 to 49}} \times 1000$$

Data Sources

1. Vital registration system for births.
2. May also be estimated from national censuses or survey data using the child-women ratio when birth statistics are not available.
3. Relates births to the age-sex group at risk of giving births (usually defined as women ages 15-49 years).
4. More refined measure than crude birth rate to compare fertility across populations.
5. Approximately equals to 4 times the crude birth rate.

Limitations

1. It is a crude measure of fertility, since not all women age 15-49 contributed to the total births.
2. May be difficult to estimate if the country does not have a reliable vital registration system, complete census or survey record.

(2 marks)

iii.) Child-woman Ratio: Number of children under age 5 per 1000 women of childbearing age in a given year.

$$\text{CWR} = \frac{\text{Number of children under age 5}}{\text{Number of women ages 15 - 49}} \times 1000$$

Data Requirements

This measure can be calculated from national censuses or survey data, thereby providing fertility data where birth statistics may not otherwise be available.

Limitations

1. It is a crude measure of fertility, since not all women age 15-49 contributed to the total births.
2. May be difficult to estimate if the country does not have a reliable vital registration system, complete census or survey record.

(2 marks)

iv.) Total Fertility Rate: The average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year.

$$\text{TFR} = 5 \times \text{ASFR} / 1,000$$

Data Sources and Limitations

1. May be estimated from national censuses or survey.
2. TFR is a “synthetic” measure of fertility that is independent of age structure of a population.
3. Best single measure to compare fertility across populations.
4. Does not give a measure of actual number of births any woman will have all through her reproductive years.

(2 marks)

v.) Gross Reproduction Rate: Average number of daughters that would be born to a woman during her lifetime if she passed through her child-bearing years conforming to the age specific fertility rates of a given year.

Data Sources and Limitations

1. May be estimated from national censuses or survey.
2. Does not give allowance for mortality.

(2 marks)

Question 2c

- i) **Fertility:** Fertility refers to the number of live births women have. Production of a live birth (natality).
- ii) **Fecundity:** Physiological capability of women to reproduce.
- iii) **Fecundability:** Probability that a woman will conceive during a menstrual cycle.
- iv) **Gravidity:** Number of pregnancies a woman has had whether or not they produce a live birth.
- v) **Sterility/Infecundity:** Inability of a woman to conceive a pregnancy. It can be further divided into two: **Primary sterility**-Never able to conceive a pregnancy.
Secondary sterility-Inability to conceive after one or more children have been born

(1 mark each = 5 marks)

Sub-total = 19 marks + 1 mark bonus = 20

marks

Question 3a

Replacement Level Fertility is said to have been reached when $\text{NRR} = 1.0$. Surviving women in the hypothetical cohort have exactly enough daughters (on average) to replace themselves in

the population. At this time $GRR > 1$ and $TFR > 2$. (Roughly, this is when couple have an average of two children.). When $NRR = 1.00$ it does not imply:

– $CBR = CDR$

– Population growth rate = 0

(5 marks)

Question 3b

Age Group	Total Pop	Male Pop	Female Pop	Births	ASFR
15-19	21,220	10,805	10415	768	73.74
20-24	21,523	10,849	10674	1990	186.43
25-29	19,626	9,801	9825	2505	254.96
30-34	17,626	8,741	8885	1867	210.13
35-39	14,008	6,904	7104	1025	144.29
40-44	11,687	5,726	5961	567	95.12
45-49	11,094	5,393	5701	105	18.42
Total	116,784		58565	8827	

i.) $CBR = \frac{\text{Births}}{\text{Mid-year Population}} \times 1,000$

$$= \frac{8,827}{116,784} \times 1,000 = 75.58 \sim 76 \text{ births} \quad (2 \text{ marks})$$

Interpretation: There were 76 births per 1,000 mid-year population in that community for that year. (1 mark)

ii.) $GFR = \frac{\text{Births}}{\text{Women Population (15-49)}} \times 1,000$

$$= \frac{8,827}{58,565} \times 1,000 = 150.72 \sim 151 \text{ births} \quad (2 \text{ marks})$$

Interpretation: There were 151 births per 1,000 women in the reproductive ages for that particular year. (1 mark)

iii.) The ASFRs are as presented in the table, that is, the number of births by each specific age groups of women per 1,000. (3 marks)

iv.) $TFR = 5 \times \text{ASFR} / 1,000$
 $= 5 \times 983.09 / 1,000$
 $= 4.92 \sim 5 \text{ births} \quad (2 \text{ marks})$

Interpretation: On the average a woman in that community/ country will have 5 children during her childbearing years. (1 mark)

v.) $GRR = \frac{TFR}{1 + SR}$
 $= \frac{4.92}{2.03} = 2.42 \sim 2$

OR

$$= \underline{5}$$

$$2.03 = 2.46 \sim 3 \quad (2 \text{ marks})$$

Interpretation: A woman will have 3 or 2 daughters to replace her at the end of her child bearing years if she go through all the ages conforming to the age specific rate. (1 marks)

Sub-total = 20 marks

Question 4a

A life table is defined as the life history of a hypothetical cohort of people born in a certain period and subject to gradual losses by mortality at each age. It can also be defined as a complete picture, summary or description of mortalities, survivorships and life expectancies for a specified population at each specific age. (2 marks)

Question 4b

i.) **l_x :** number of survivors at exact age x. The radix is set at 100,000; other l_x values are calculated either from ${}_n p_x$ or ${}_n d_x$.

$$\boxed{\begin{matrix} l_{x+n} = l_x \times {}_n p_x \\ l_{x+n} = l_x - {}_n d_x \end{matrix}}$$

ii.) **${}_n d_x$:** This is the number of deaths that occur between age x and x+n in the population. It can be derived thus; ${}_n d_x = l_{x+n} - l_x$ - $\boxed{{}_n d_x = l_x \times {}_n q_x}$

iii.) **${}_n q_x$:** It is defined as the probability of dying between age x and x+n. It can be derived thus; ${}_n q_x = {}_n d_x / l_x$

iv.) **${}_n p_x$:** This represent the probability of surviving between age x and x+n. It can be derived thus: ${}_n p_x = 1 - {}_n d_x$

v.) **${}_n L_x$:** This is the average number of persons living between ages x and x+n. It can be derived thus:

$$\boxed{{}_n L_x = \frac{n}{2} (l_x + l_{x+n})}$$

vi.) **T_x :** Total number of population aged x and over. It is derived by summing the values of ${}_n L_x$ from the bottom to the top.

vii.) **e_x :** This is defined as the expectation of life from age x. It can be expressed as: T_x / l_x
(1 mark each for any five functions mentioned = 5 marks)

Question 4c

Age	n	nM_x	nq_x	np_x	l_x	nd_x	nL_x	T_x	e_x
0	1	15.307	0.01519	0.98481	100000	1519	98937	7602846	76.03
1	4	0.652	0.00260	0.99740	98481	257	393411	7503910	76.20
5	5	0.303	0.00151	0.99849	98224	149	490750	7110499	72.39
10	5	0.282	0.00141	0.99859	98076	138	490033	6619748	67.50
15	5	0.561	0.00280	0.99720	97938	274	489002	6129715	62.59
20	5	0.679	0.00339	0.99661	97663	331	487489	5640713	57.76

25	5	0.785	0.00392	0.99608	97332	381	485708	5153225	52.94
30	5	1.035	0.00516	0.99484	96951	500	483504	4667517	48.14
35	5	0.863	0.00431	0.99569	96450	415	481214	4184014	43.38
40	5	2.506	0.01245	0.98755	96035	1196	477186	3702799	38.56
45	5	3.834	0.01899	0.98101	94839	1801	469695	3225613	34.01
50	5	5.626	0.02774	0.97226	93039	2581	458741	2755918	29.62
55	5	8.447	0.04136	0.95864	90458	3741	442935	2297177	25.40
60	5	12.667	0.06139	0.93861	86716	5324	420272	1854243	21.38
65	5	18.233	0.08719	0.91281	81393	7097	389221	1433970	17.62
70	5	30.737	0.14272	0.85728	74296	10603	344971	1044749	14.06
75	5	51.098	0.22655	0.77345	63693	14430	282389	699778	10.99
80	5	80.850	0.33628	0.66372	49263	16566	204900	417389	8.47
85	infinity	153.876	1.00000	0.00000	32697	32697	212489	212489	6.50
Totals						100000	7602846		

(13 marks)

Sub-total = 20 marks

Question 5a

Population A = $1 (e^{0.01 \times 30}) = 1 (1.35) = 1$ (1 mark)

Population B = $1 (e^{0.02 \times 30}) = 1 (1.82) = 2$ (1 mark)

Ratio of the population size of A relative to B in 30 years is 1: 2 (1 mark)

Interpretation

This implies that in 30 years' time the population of A will not change while that of B will be twice what it is today with respect to the constant rate of growth. (2 marks)

Question 5b

This implies that a child born in Thailand in 2002, has the probability of living up to age 87 years. It can also be interpreted thus as; a child born in Thailand in 2002 on the average will live for 87 years. (5 marks)

Question 5c

The rectangular distribution assumption means that there are an equal number of persons in each age category of the true population. For example, in a 10-year range, we may measure heaping on terminal digit "0" in the range 23 to 62 very roughly by comparing the sum of the populations at the ages ending in "0" in this range with one-tenth of the total population in the range (WI_0^{10}).

(5 marks)

Question 5d

Life table can be classified in different ways. It can be classified according the reference year of the table, age detail and the number of factors comprehended by the table.

Life tables classified according to the length of the age interval in which the data represented are:

1. Complete Life Tables and,
2. Abridged Life Tables

The classifications according to the reference year of the table produce:

1. Cohort (or generation) life tables and,
2. Period (or current) life tables.

Complete Life Table

A Complete Life Table is one in which the mortality experiences are constructed in a single year of age. All columns are in single years and it extremely detailed.

Abridged Life Table

Abridged Life Table on the other hand relates to mortality experiences which are given in age groups. It contains data by 5 or 10 years age interval. The computation of this type of life table is more laborious than the complete life table.

Cohort/Generation Life Table

The Cohort life table presents the mortality experience of a particular birth cohort (e.g. all persons born in a particular year). It measures mortality from the moment of birth through each consecutive age in successive calendar years until all of them die. It is based on age-specific death rates observed through consecutive calendar years. The cohort life table reflects the mortality experience of an actual cohort from birth until no lives remain in the group.

Current/Period Life Table

This life table is based on experience over a short period of time such as 1 year, 3 years or an inter censal period in which mortality has remained substantially the same (constant). This life table represents the combined mortality experience by age of the population in a particular short period of time. It does not represent the mortality experience of an actual cohort. It only assumes a hypothetical cohort that is subject to the age-specific death rates observed in the particular period of reference. Thus, it is viewed as a current **snap-shot** of current mortality.

(5 marks)

Sub-total = 20 marks

GRAND TOTAL = 70 Marks

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TITLE OF EXAMINATION: B.Sc DEGREE EXAMINATION
COLLEGE: BUSINESS AND SOCIAL SCIENCES.
SCHOOL: SOCIAL SCIENCES
DEPARTMENT: ECONOMICS AND DEV. STUDIES
SESSION: 2014/2015
ALPHA
COURSE CODE: DSS 412

SEMESTER:

CREDIT UNIT: 2

COURSE TITLE: POPULATION THEORIES

INSTRUCTION: ANSWER NO 1 AND ANY OTHER TWO.
HOURS

TIME: 2

1. (a) Explain the five stages of demographic transition theory, stating countries that are in each stage of the transition. (10 marks)
- (b) Briefly explain the role of social factors on fertility behaviour in Nigeria. (10 marks)
- (c) State five limitations of demographic transition theory (10 marks)

2. (a) Discuss the Malthus predictions of population growth. (10 marks)
- (b) Explain briefly the criticism of Malthus Theory. (10 marks)

3. (a) Briefly explain the concept of Optimum Population Theory. (10marks)
- (b) Mention five superiority of Optimum population over Malthusian theory of Population. (10 marks)

4. (a) Outline the contributions of the Mercantilist and Physiocratic writers to the Development of population theories. (10 marks)

(b) What are the points of convergence and divergence between both schools of thought?

(10 marks)

5. (a) More recent developments in population theories have been influenced predominantly by two factors. What are these factors? (8 marks)

(b) Discuss the contributions of the following ancient writers to the development of Population theories: (i) the Greeks (ii) the Romans (iii) Christians/ Hebrews (iv) Muslim writers.

(12marks)

TOTAL MARKS OBTAINABLE=
70

MARKING GUIDE

Question 1

The demographic transition is a model and theory describing the transition from high birth and death rates to low birth and death rates that occurs as part of the economic development of a country. This transition can be broken down into five stages.

Stage one

This can be referred to as the pre-industrial stage. In this stage of the transition societies have high birth and death rates. Because both rates are high, population grows slowly and also tends to be very young: Many people are born, but few live very long. This stage is the agricultural stage of the society.

Stage two

This can be referred to as the early stage of industrial revolution. As death rates fall, birth rates remain high, resulting in a population explosion. Population growth is not due to increasing fertility, but to decreasing deaths: Many people continue to be born, but now, more of them live longer. Falling death rates also change the age structure of the population.

Stage three

During the post-industrial stage, birth rates fall, eventually balancing the lower death rates. As birth rates fall, the age structure of the population changes again. Families have fewer children to support, decreasing the youth dependency ratio. The growth rate is low. But as people live longer, the population as a whole grows older, creating a higher rate of old age dependency. During the period between the decline in youth dependency and rise in old age dependency, there is a demographic window of opportunity called the demographic dividend.

Stage four

In this stage population growth stabilizes as birth rates fall into line with death rates. In some cases, birth rates may even drop below replacement level, resulting in a shrinking population. Death rates in developed countries may remain consistently low or increase slightly due to lifestyle diseases related to low exercise levels and high obesity and an aging population. The growth rate of this stage is zero.

Stage five

This is characterized by negative growth rate. Due to measures adopted in the developed countries of the world the population of such country find it difficult to have more than one child and some are not interested in having any child. As a result the population of such country is tending towards ageing population. In this stage the aged population is more than the younger and working population.

[Each stage 1^{1/2} mks Diagram 1^{1/2} mks and DTT definition 1 mk]

(b) Role of social factors on fertility behaviour in Nigeria. (10 marks)

1. **Women status:** The expression vividly illustrates the status of women in the traditional setting. Traditions accord a low status for the females and prime status to the male. Consequently the male dominates the affairs of the community and at home the head of the family and chief bread winner. In this position the male is Lord and master and so regarded by the wife or wives by tradition, his decision is final and what he opposes or objects to should not be contemplated by the wife.
2. **Value for children:** In Nigeria, a wide range of activities involves interdependence with kinsmen and especially with children. This includes production, consumption, leisure activity, assistance in illness and old-age and many other activities covered by the family institution. Therefore, the observed high fertility among Nigerian women is a function of the prevalence of the extended family structure.
3. **Sex preference:** In most cultures in Nigeria, the man's societal status depends on the number of children especially sons that he has and the pride of place generally accorded the male in society as in some instances resulted in couples having more than normal family size in the quest for at least a son among their children.
4. **Contraceptive adoption:** male dominants and lack of communication between husband and wife is said to retard the adoption of family planning. This might be especially true if the wife has the strongest interest in family limitation while the husband is indifferent or even opposes to it.
5. **High mortality rate:** a society with high and variable mortality is likely to have built into his cultural pattern strong pressures for having many children so as to have extra children as a safe-guard against the loss of the essential minimum member. If this explanation is acceptable we will then hypothesise that fertility is persistently high among women in Nigeria because of relatively high infant and child mortality.

(c) State five limitations of demographic transition theory

(10 marks)

- It fails to predict the rise in fertility levels of western nations in the immediate post world war 11
- The demographic experience of less developed countries in the recent times has failed to replicate the pattern of transition in the Western Europe. In most developing countries fertility is rising with increasing level of education, industrialization and urbanisation
- The fall in mortality in these developing countries is a deviation from DTT pattern in that it is very fast.
- The theory has to do with determination of relevant component of modernisation.

2. (a) Discuss the Malthus predictions of population growth.

(10 marks)

The view that man's capacity to reproduce was unlimited whereas that of producing his means of subsistence was limited had already been produced by such writer as Botero in the 16th century. This idea was most forcefully presented by Malthus. He was the first to develop a consistent and comprehensive population theory in relation to economic conditions and his writings exercised a great influence on population mainly on his essay on the principle of population first published in 1798. The first edition of his essay was essentially directed against earlier writers who held optimistic views concerning the possibility of supporting an increasing population.

In *Essay on the Principle of Population*, Malthus proposes the principle that human populations grow exponentially (i.e., doubling with each cycle) while food production grows at an arithmetic rate (i.e. by the repeated addition of a uniform increment in each uniform interval of time). Thus, while food output was likely to increase in a series of twenty-five year intervals in the arithmetic progression 1, 2, 3, 4, 5, 6, 7, 8, 9, and so on, population was capable of increasing in the geometric progression 1, 2, 4, 8, 16, 32, 64, 128, 256, and so forth. This scenario of arithmetic growth food with simultaneous geometric human population growth predicted a future when humans would have no resources to survive on. Malthus demonstrated that population always tended towards the limit set by subsistence and was contained within those limits by the operation of positive and preventive checks.

Positive checks: he believed that nature will control population growth which include war plague, famine e.t.c

Preventive checks: these are human checks which include moral restraint, which consisted of the deferment of marriage, would take the form of misery and vices [10 marks]

(b) Explain briefly the criticism of Malthus Theory.

(10 marks)

Group one maintained that preventive checks would become more unimportant in slowing down population growth though they offered little rationale to support this belief. Representatives include **Hamilton** who held that the rate of population would fall as civilization advanced; **Weyland** who thought that population ceases to grow when a sufficiently high proportion of the people moved cities where birth rates were lower. **Spegler** presumed that the standard of living would continue to rise and check undue population growth.

The second group of writers attempted to demonstrate that preventive checks were the result of social and economic progress. **Richard and Alison** argued that as the real income of workers rose they tended to adjust their standards of life accordingly and that the higher standards once attained would

not be relinquished. As they become more self respecting workers would protect their position by postponing marriage and limiting their families as well as in other ways.

The third group of writers who rejected Malthus population theory emphasised the reduction of natural fecundity which they believe would necessarily occur in the course of economic development as a result of social selection and changes. Some saw the reason for a decline of human fecundity in increased mental exertion in feeding and modification of diet.

3. (a) Briefly explain the concept of Optimum Population Theory.

(10marks)

Optimum population theory is a theory of a normative statement, which attempts to define an economically ideal size of population for a country. According to Malthus, every increase in population is harmful to the society. However, the optimum population theory states that population growth may be harmful or beneficial for an economy depending upon whether the increase is pulling the economy towards optimum or pushing it away from it. The optimum means the best and the most desirable size of a country's population. In a narrow sense, this theory is not a theory of population because it does not explain why population grows or what determines the birth and death rates.

The optimum population theory is based on three important concepts: Under population, Over population and Optimum population

Under population: An increase in the growth of population will bring into the operation of the law of increasing returns. Under population has at least two bad effects. Firstly, more quantity cannot be produced, and so production will suffer. Secondly, due to the shortage of labour force, specialization is not feasible.

Over population

It means that the existing capital and natural resources are shared by more men. The dangers of over population are three. Firstly, the existing resources are not sufficient to provide gainful employment to all. Secondly, due to excessive population, the average productivity will fall. Thirdly, the standard of living will be affected. Famine, war and diseases are the intimate companions of the people.

(b) Mention five superiority of Optimum population over Malthusian theory of Population

1. Malthusian theory is applicable only to over-populated countries. But optimum population theory is applicable to all countries, irrespective of their economic condition.
2. Malthusian theory is pessimistic, because it predicted a gloomy picture about mankind, pre-occupied with misery, vice, droughts, diseases and other natural calamities. Optimum population theory is on the other hand optimistic in its approach.
3. According to Malthus, every increase in population is bad. In fact, Malthus was worried about the mouths and stomachs of babies as he considered them as 'sterile'. But optimum population theory considers that every increase is good or bad depending upon the natural resources of the economy.

4. Malthus was worried about securing a minimum subsistence level for the individual whereas the exponents of the optimum population theory are concerned with securing a maximum per capita income for the country's population.
5. Malthus believed in the operation of the law of diminishing returns. But the exponents of optimum population theory consider the possibility of increasing returns up to the point of optimum and decreasing returns only after the point of optimum is reached.
6. Malthusian theory is static because it applies to a period. But optimum population theory is relatively dynamic since it admits the possibility of changes in per capita income with change in capital, natural resources and technology.

Question 4

a. MERCANTILIST VIEWS

While the ideas of individual mercantilist writers diverged considerably and the term "mercantilism" continues to be interpreted differently the central tenet was the power and wealth of the state, and, in particular, the accumulation of money and precious metals came to be considered by a number of these writers as the main objective of national policies. The principal means of attaining these goals of power and wealth were the expansion of foreign trade and the development of manufacturing. Mercantilist doctrine oriented towards economic policy, did not develop a population theory in a strict sense, although views on population occupied a prominent place in the mercantilist system.

[5 marks]

THE PHYSIOCRATIC VIEWS

The physiocratic school of economic thought, evolved in France about the middle of the eighteenth century, may be considered as the expression of a reaction against the mercantilist ideas and policies. While the mercantilists had neglected agriculture in their enthusiasm for the acquisition of gold and silver through trade in manufactured goods, the basic assumption of the physiocratic school was that land was the source of all wealth and hence it was necessary to emphasize the importance of agriculture and internal tax reforms.

Quesney (1694-1774), the founder of the physiocratic school, maintained that a large population was desirable only if it could be made comfortable. He stressed that more emphasis should be given to increase of wealth than to that of population.

Mirabeau (1715-1789), another French economic thinker, was of the opinion that a larger population would be desirable for the state, but agricultural must be encouraged because this population would have to be fed.

[5 marks]

(b)

The points of convergence

- a. They both considered population growth to be desirable for military, political and economic reasons.
- b. They believed on increasing return but they argued it differently.
- c. They see population growth as a way of increasing a nation's wealth.
- d. They believed that population growth is limited but means of subsistence. [5 marks]

The points of divergence

- a. Mercantilist has to do with industrial sector while a physiocrat has to do with agricultural sector.
- b. Mercantilist encouraged policies that will stimulate population unlike the physiocrat.
- c. Mercantilist did not mention the causes of changes in population unlike the physiocrat who made an explanation.
- d. The basic fundamental concept of physiocrat is natural order (land) but that of mercantilist is economic policies. [5 marks]

TOTAL [20
marks]

Question 5

Ideas and theories of population have nearly always revolved round the real or supposed problems of individual societies and have stimulated the most response when directed specifically towards those problems. Thus the ideas of the philosophers of Ancient Greeks dealt mainly with the population problems faced by the city states with a relatively small population.

More recent development in population theories have been influenced predominantly by two factors:

1. The upsurge of population growth especially in the developing countries. This fact has created a need for a better understanding of the factors in population growth.
2. The nearly universal pre-occupation with the problems of development called for a considerably more penetrating theoretical framework for assessing the inter-relationship between population and development, economic and social development. [4 marks each]

Question 4b

VIEWS OF GREEK WRITER ON POPULATION GROWTH

Plato and Aristotle discussed the problem of optimum population with respect to the great city state in their writings on the ideal conditions of full mans potential. They considered the problem of population size not so much in economic terms but more from the point of view of defense, security and government. Their thought was that population should be sufficient and thus possess enough territory its needs but not to be as large as to make constitutional government impossible.

Therefore Plato held that if the so called "highest goods" was to be achieved a city state should have "5,040" citizens

VIEWS OF THE ROMANS ON POPULATION GROWTH

The Romans were less conscious than the Greeks of possible limit to population growth and more alert to its advantages for military and related purposes. They did not think of reducing population size. The law of Augustus created privileges for those married and **having** children and discriminating financially against those not married aimed at raising the marriage and birth rate.

VIEWS OF THE HEBREWS (CHRISTIANS) ON POPULATION GROWTH

The Hebrew sacred book “the Bible” placed more emphasis on procreation and multiplication and for this reason; unfruitfulness was regarded as a serious misfortune. The medieval Christian writers considered questions on population almost entirely from a moral and ethical stand point. Their doctrine was mainly population. On the other hand they condemned polygamy, they condemn divorce, they condemned abortion and they also condemn infanticide. On the other hand they glorified virginity and frowns upon second marriage.

VIEWS OF MUSLIMS ON POPULATION GROWTH

The Muslim position on population growth was similar in much respect to those of Hebrews and Christian doctrines. The Muslim writers held that a large territory of population was conducive to higher levels of living since it permitted a greater division of labour, a more effective use of resources and for military and political security. They also maintain that in economy sphere there is a cyclic variation in the population. Favourable economic condition and good political order encourage high birth rate and when there is economic decline there follows political decline and reduction in population (depopulation). [3 marks each]

TOTAL [20 marks]

TOTAL MARKS OBTAINABLE: 70

COVENANT UNIVERSITY

CANAANLAND, KM 10 IDIROKO ROAD,
P.M.B 1023, OTA, OGUN STATE, NIGERIA

TITLE OF EXAMINATION: B.Sc DEGREE EXAMINATION

COLLEGE: BUSINESS AND SOCIAL SCIENCES.

SCHOOL: SOCIAL SCIENCES

DEPARTMENT: ECONOMICS AND DEV. STUDIES

SESSION: 2014/2015

ALPHA

COURSE CODE: DSS 413

SEMESTER:

CREDIT UNIT: 2

COURSE TITLE: ADVANCED SOCIAL STATISTICS I

INSTRUCTION: ANSWER NO 1 AND ANY OTHER TWO.

TIME: 2

HOURS

1. a. The probability in minutes of being waited on in a large chain restaurant is given by the frequency function $f(t) = \frac{4}{9} t^3$ for $0 \leq t \leq 3$. (5 marks)

81

What is the probability of being waited on between 1 and 2 minutes?

- b. if $f(x,y) = \frac{4xy}{9}$ $0 \leq x \leq 1$ and $1 \leq y \leq 2$. Find $f(y/x)$ and $f(x/y)$. (10 marks)

3

- c. State the laws of expected value (5 marks)

d. On an elementary school examination in spelling, the mean grade of 32 boys was 72

with a standard deviation of 8 while the mean grade of 22 girls was 80 and standard deviation of 6. Test the hypothesis that the girls are better in spelling than the boys at

15 level of significance. (10 marks)

2. Average rain falls in May were examined in two regions for the past few years. Region I have an average rainfall 4.93cm with a variance of 1.29cm during the past fifteen years. Region II have an average rainfall of 2.64cm with a standard deviation of 0.66cm during the past ten years.

- (a) Find a 95% confidence interval for the difference of the true average rainfall in these two regions assuming the observations came from normal population with different variances.

(10

marks)

- (b) Is the average rainfall in region II significantly lower than that of region I in the month of May? Use $\alpha = 0.05$.

(10 marks)

3. Seed for four different types of corn are planted in five blocks. Each block is divided into four plots, which are then randomly assigned to the four types.
- (a) Determine at the whether the yields in bushels have an impact on the type of corn. (10 marks)
- (b) What conclusion can you draw at 5% level of significance? (10 marks)
4. a. Find the expected number of chemist on a committee of size 3 selected at random from 4 Chemist and 3 Biologist. (10 marks)
- b. Find the marginal probability function for the joint probability function $f(x,y) = \frac{6-x-y}{8}$ $0 \leq x \leq 2$ and $2 \leq y \leq 4$. (10 marks)
5. Ten plots of land of land are treated with fertilizers produced by Eboda and co. and twelve by Amaka and co. The yields of the first plots have a mean yield of 6.00 with a variance of 9×10^{-4} bushels. The yields of the second plots have a mean yield of 5.95 with a variance of 1.6×10^{-3} bushels.
- a. Is there a difference in the effect of the fertilizers at 0.01 level of significance? (10 marks)
- b. What conclusion can you draw at 5 % level of significance? (10 marks)

**TOTAL MARKS OBTAINABLE =
70**

COVENANT UNIVERSITY

CANAANLAND, KM 10, IDIROKO ROAD

P.M.B. 1023, OTA, OGUN STATE, NIGERIA

TITLE OF EXAMINATION: B. SC DEGREE EXAMINATION

COLLEGE: BUSINESS AND SOCIAL SCIENCES

SCHOOL: SOCIAL SCIENCES

DEPARTMENT: ECONOMICS & DEV'T STUDIES

SESSION: 2014/2015

SEMESTER: ALPHA

COURSE CODE: DSS 415

CREDIT UNIT: 2

COURSE TITLE: POPULATION AND ENVIRONMENT

INSTRUCTION: ANSWER QUESTION 1 & ANY OTHER 2 QUESTIONS. TIME: 2 HRS

1. Explain the following:

- i. Demographic characteristics of rural area (6 marks).
- ii. Benefits of Biodiversity (6 marks).
- iii. Measures of environmental protection (6 marks).
- iv. Constraints of rapid population growth on Agriculture (6 marks).
- v. Importance of animal resources (6 marks).

(Total 30 marks)

2a. Explain the sources of environmental damage (10 marks).

b. How can population growth be reduced? (10 marks). (Total 20 marks).

3a. Developing countries have been blamed for causing environmental degradation. Explain the reasons for the blame. (10 marks).

b Explain the predicaments of conservation of natural resources in Nigeria (10 marks).

(Total 20 marks).

4a. Explain the damage caused to biosphere by population growth (10 marks).

b. Differentiate between urbanism and urbanization. Explain the factors responsible for city growth (10 marks). (Total 20 marks).

5a. Explain the environmental impact of poor waste management in Nigeria (10 marks).

b. Explain the population problems confronting urban residents and how to ameliorate them (10 marks) (Total 20 marks).

Good luck!

MARKING GUIDE

1. Explain-

- i. Demographic cctics of rural areas (6marks) - High BRs and high DRs, being agrarian in nature, children become an asset due to child labour, the larger the no of children, the larger the size of the family labour force. Poor health status aggravates the problem of child survival and fear of death of children of children leading to accelerated birth rate beyond the desire of most families. Active population engages in rural – urban migration for greener pastures leaving the dependents and contributing to urban population problems and environmental degradation. Low age at marriage, sex preference in favour of males, sex discrimination, high gender roles, low status of women (SOW), value of children/vos, high dependency ratio.
- ii. Benefits of Biodiversity (6 marks).
Provides valuable ecosystem services, food, fuel, fiber, shelter and building materials, purifies air, detoxifies and decomposes wastes, stabilizers and moderates earth's climate, moderates floods, droughts, wind and temperature extremes, generates and renews soil fertility, pollinates plants, control pests and diseases, provide cultural, sources of recreation, research, provides aesthetic benefits, prevents environmental degradation.
- iii. Measures of environmental protection (6 marks).
devising reversal deforestation progrs, control of erosion, evolve new and renewable sources of energy, improvement in the quality of life, legislation, forestation progrs, enforcement of existing laws against the practice of bush burning and deforestation, reducing pop growth, use of substitute to fuel wood, protection of animal and plant species, improve the quality of life, reduction of r-u migration, use of up-to-date technology, enhance SOW,
- iv. Constraints of rapid population growth on Agriculture (6 marks).
Pressure for more food production and food shortages, shelter reduces agric land, reduces soil fertility, reduces food production via r-u migration, leads to land fragmentation and reduces the agric land, contributes to deforestation and erosion, loss of biodiversity, over cultivation and overgrazing.
- v. Importance of animal resources (6 marks).
- vi. Food, transport, agricultural operations, pollination, research, entertainment/circus, wax, leather, wool, silk, fur, dispersal of fruits and seeds, pearls, scavengers, fuel wood, helps in maintaining the ecosystems.

2a. Explain the sources of environmental damage (10 marks).

poverty, skewed systems of land tenure, uncontrolled commercialization of natural resources and exploration, poor control of polluting industries, destructive farming techniques, improper planned urbanization/industrialization, resource depletion, overcrowding, unemployment, poverty, population growth and high fertility.

b. How can population growth be reduced? (10 marks).

Use of contraceptives, advocate of FP, advertise and propagate population regulation, legalize abortion, equality and empowerment of women, improvement in health services, reduction of mortality especially under 5 and mothers, improve living standards, evolve social security, expunge non-friendly cultural practices-widow inheritance, voc/s, child labour, etc.

3a. Developing countries have been blamed for causing environmental degradation. Explain the reasons for the blame. (10 marks).

High fertility and pop growth rate-a/cs for over 95% of world population growth, poverty, rising affluence, skewed systems of land tenure, uncontrolled commercialization and exploitation of natural resources, inadequate control of polluting industries, destructive farming techniques, rapid increase in demand for fuel wood by large proportion of pop, indiscriminate deforestation, over cultivation, overgrazing and overfishing, poor land conservation.

b Explain the predicaments of conservation of natural resources in Nigeria (10 marks).

Increase in growth of pop, quest for better living std, poverty, state of technology, high demand for more food, high demand on agric land, recreational outfits, poor living conditions, need for road net work, natural forces, Low sow, weak laws, illiteracy, corruption, lack of adequate education and information, high demand for forest and forest byproducts, high demand for industries and industrial products, high demand for building and development, land scarcity, quest for better and high standard of living .

4a. Explain the damage cause to biosphere by population growth (10 marks).

Green house effect, ozone layer depletion, acid rain, desertification, deforestation, pollution and reduction in biodiversity.

b. Differentiate between urbanism and urbanization. Explain the factors responsible for city growth (10 marks).

Urbanism – ways of life associated with living in urban areas or growth in the proportion of the population living in urban areas or process of pop concentration in urban areas.

Factors responsible for city growth- i) NI of urban population, Net in migration, annexation-adjustment of city boundaries to accommodate city expansion or boundary changes, political factor, industrialization and Physical endowment – ports, mineral deposit, etc

5a. Explain the environmental impact of poor waste management in Nigeria (10 marks).

Flooding- dumping of refuse into gutters , drainages, open drain results in blockage of river channels and lead to flooding and destruction of lives and properties, waste pollution- seepage of percolate into ground water from solid wastes causes water pollution, leading to ground water contamination which is a potent source of spread of water borne diseases, air pollution-open dumpsite and indiscriminate burning of solid wastes, fill the air with offensive odours with its attendant health risk to the populace. It also contribute to poor quality of housing and the environment

b. Explain the population problems confronting urban residents and how to ameliorate them (10 marks).

Worsen solid waste disposal, increase in pollution, land scarcity, inadequate amenities, shortage of houses, unemployment, high cost of living, high crime wave, slums and shantytowns, poor living stds, overcrowding, traffic congestion, loss of open space,

How to ameliorate them- propagation of population control, legalize abortion, equality and empowerment of women, improvement in health services, improve living standards, even development in both urban and rural areas, even distribution of amenities in both rural and urban areas, More govt houses, govt regulation of slum emergence, Need for effective public-private sector partnership in solid waste disposal, strong govt involvement in city transportation and job creation by govt.

COVENANT UNIVERSITY

CANAANLAND, KM 10 IDI IROKO ROAD, P.M.B. 1023, OTA, OGUN STATE, NIGERIA

TITLE OF EXAMINATION:

B.Sc. DEGREE EXAMINATION

COLLEGE: CBS

SCHOOL: SOCIAL SCIENCES

DEPARTMENT: ECONS & DEV. STUDIES

PROGRAM: DEMOGRAPHY & SOC. STATISTICS

SESSION: 2014/2015

SEMESTER: ALPHA

COURSE CODE: DSS 416

TIME ALLOWED: 2 Hours

COURSE TITLE: DEM. SITUATION IN DEVLP. COUNTRIES 1

MARKING GUIDE

SECTION A

Question 1

- a.) The process of collecting, compiling, evaluating, analysing and publishing or disseminating demographic, social and economic data about the entire population of a well-defined territory at a specified time. **(4 marks)**

b.) Essential characteristics

1. Universality
2. Simultaneity
3. Individual enumeration
4. Usually carried out by government
5. Carried out at regular intervals of 5 or 10 years

(2 marks each for any four mentioned = 8

marks)

c.) Types of Census

- i.) **De jure**: legal or customary attachment to an area (you are registered where you usually reside). **(2 marks)**
- ii.) **De facto**: physical residence (you are registered where you are currently staying/residing at the time of the census). **(2 marks)**

d.) Kinds of errors in Census

- i.) **Content Error**: Mistake made in the recorded information in the census questionnaire either by the respondent or by the interviewer.
- ii.) **Coverage Error**: Under or over-enumeration in a population census due to either omission or duplication.

iii.) Estimation Error:

(2 marks each = 6 marks)

- e.) These are long-term investments and those who should benefit from it majorly must be persons who usually resides in such communities. By knowing the population size of those who permanently resides in these cities will help the government to know how large the schools (i.e. in terms of number of class rooms, number of teachers to employ, etc.) and hospitals should be. Take for instance, in a very densely populated environment government may go beyond just building a primary health care facility to building a secondary health care facility, in order to adequately cater for the needs of the populace. Also, persons who came to stay temporarily for some time in those communities might benefit from the provision of schools and health care services. A

typical example might be school children who came to spend holiday with their father, say one or two months in another state or community different from where they usually reside, due to the job location of their father. If any of such children fall sick during this visit, there might be need to go to the health care facility for medical attention. Hence, it's not only the permanent residents that will enjoy such provision, visitors likewise will benefit from this. Therefore, the best type of census to employ is the De-facto census, since it covers those who are usual residents and visitors. **(8 marks)**

SECTION B

Question 2

- a.) The scientific study of human populations primarily with respect to their size, their structure [composition] and their development [change]. **(2 marks)**
- b.) i.) Static aspects include characteristics such as composition by age, sex, race, marital status, economic characteristics at a point in time. **(3 marks)**
ii.) Dynamics: This aspects focus on factors that bring about changes in the population and they are fertility, mortality, nuptiality, migration and growth. **(3 marks)**
- c.) Demography can be considered as been a relevant social science discipline in several ways, some of which are stated below:
- i.) The most fundamental is to describe changes in population size, distribution, and composition as a guide for decision making.
 - ii.) Demographers make use of data collected from censuses and survey or vital information gathered over the years in studying population trends, developing theories of population change, and analyzing the causes and consequences of population trends.
 - iii.) The resulting demographic data can then be used to describe the distribution of the population in space, its degree of concentration or dispersion, the fluctuations in its rate of growth, and its movements from one area to another.
 - iv.) One demographer may study them to determine if there is evidence to support the human capital theory of migration.
- (2 marks each = 6 marks)**
- d.) A demographer can work in the following places:
- i.) **In an insurance company:** A demography with a good knowledge of life table will fit in well in an insurance company. Especially, in the area of life insurance or assurance policy.
 - ii.) **Marketing Firm:** A demographer will serve as a good researcher in a marketing firm for the purpose of generating data for the firm. Using the knowledge of statistics the demography can help the firm in identifying target population, gather response for customers on how to improve products, project into the future with respect to available data/ information.

- iii.) **Research & Development Department:** Demographers are good researchers, coupled with the fact that they have the know-how of conducting a survey and understanding of statistics. Therefore, their importance in any research and development department cannot be over-emphasized.

(2 marks each = 6 marks)

Question 3

- i. The population of the community on December 31, 2013
 $75,000 + 2,750 + 3,150 - 1,200 - 1,500 = 78,200$ (3 marks)

- ii. Mid- year Population = $\frac{78,200 + 75,000}{2} = 76,600$ (3 marks)

- iii. CBR = $\frac{3,150}{76,600} \times 1,000 = 41.1 \sim 41$ births
 There were 41 births per 1,000 mid-year population. (3 marks)

$$\text{CDR} = \frac{1,500}{76,600} \times 1,000 = 19.6 \sim 20 \text{ births} \quad (3 \text{ marks})$$

There were 20 deaths per 1,000 mid-year population.

- iv. **Natural Rate of Increase (NI)** = $\frac{B - D}{1,000} \times 100$
 $\frac{41 - 20}{1,000} \times 100 = 2.1 \%$
 (4 marks)

- v. **Number years for doubling = 70/r**

$$r = \frac{P_2 - P_1}{P_1} \times 100$$

Where: r is the growth rate; P₁ is the previous population size and P₂ is the current population size.

$$r = \frac{78,200 - 75,000}{75,000} \times 100$$

$$r = 4.3\%$$

Number years for doubling = 70/4.3 = 16 years. (4 marks)

Question 4

i.) - Population structure can also be referred to population composition and this can be defined as the characteristics of the population. **The Age/Sex composition is generally referred to as the population structure.** (2 marks)

- Child dependency ratio is the proportion of population under 15 years to population age 15 to 64 years. That is, the proportion of children between ages 0-14 years to the working class population (ages 15-64 years).

$$\text{Child Dependency Ratio} = \frac{\text{Population}_{0-14}}{\text{Population}_{15-64}} \times 100 \quad (2 \text{ marks})$$

ii.) Demographers call these type of diagrams **Population pyramid.** (2 marks)

iii.) Ranks of Countries

	High	Medium	Low
Fertility Rate	Kenya	United State	Germany
Elderly Dependency Ratio	Germany	United State	Kenya
Median Age of the Population	Germany	United State	Kenya
Life Expectancy at Birth	Germany	United State	Kenya

(8 marks)

iv.) Demographic Dividend emanate from a window of opportunity which opens when a country has been able to reduce fertility to the minimum and improve life expectancy of her populace such that more persons are found in the productive/ working age groups and have higher probability of living up to later old ages. At this stage, the country need not allocate a larger percentage of her budget on recurrent expenditures, but rather on long-term investment that will help to develop the country and improve the standard of living of the people. When this window of opportunity opens in any economy, the populace are also contributing productively to the economy (i.e. they are assets and not a burden on the government).

Out of the three countries previously listed, Kenya is the only country that has had the least experience of demographic dividend, because this country still have high fertility rate, low median age of the population and low life expectancy which are key factors in determining if a country will enter this stage. Low median age of the country is a pointer to the fact that the proportion of the population who are productively contributing to the economy is small, compared with the percentage of those who are dependants. (6 marks).