TOPIC 1: INTRODUCTION TO RESEARCH

Research Is the careful collection of data/information based on a problem, analyzing the data and making conclusion out of those collected. Or Research is a scientific and systematic process of collecting, analyzing and interpreting data basing on a certain phenomenon.

RESEARCH DATA

Is a body of information about a particular problem

TYPES/SOURCES OF DATA IN RESEARCH

i) Primary source/data is the original data collected directly from the field, they are obtained through interviews, questionnaires, observation and focus group discussion.

ii) Secondary sources/data is the data collected from documents. Example; through books, journals, economics, survey, census report, official report

OBJECTIVES OF RESEARCH

• To describe about certain phenomena

• To search for a new knowledge/insights.

• To develop theory about certain social economic phenomena.

• To test hypothesis so as to find out their reliability.

• To be familiar with a certain phenomena

• To find solution to the existing problems.

• To make evaluation of a certain issue.

Importance of research in daily life

1. Research is the Way to Prove Lies and to Support Truths

2. Research develop or generate new knowledge e.g the information produced by research can be applied in many ways.

3. It helps to improve human activities for the betterment of people e.g A society can develop irrigation scheme when finds show that there is food shortage.

4. Research can be used to develop new theories and laws.

5. Research enable in finding solutions about the special programmes e.g HIV, hunger, etc.

6. It helps to improve various sectors as related to daily life e.g Agriculture, industries, etc.

7. It provides reliable and needed information to data bank.

TYPES OF RESEARCH

1. According to their aims/purpose

 i) Basic/pure research Is a type of research which is conducted to collect data to advance or develop a certain scientific knowledge. It is always done through the verification of theories especially in laboratory.

ii) Applied research Is the research which seeks the specific knowledge necessary to find solution to solve certain in the society.

iii) Evaluative research It a type of research which is conducted purposely to measure or asses the achievement of a certain scientific practice.

iv) Analytical research Is a type of research that uses facts already available and analyses these facts to make a critical evaluation of the material.

v) Fundamental research Is a type of research which studies life process that is universal in their application to scientific knowledge.

2. According to the type of data to be collected.

 i) Quantitative research It focuses on the measurement of quantity. It is applicable on phenomena that can be expressed in terms of quantity like population data. It tries to answer the question how much? How many?

 ii) Qualitative research. It concerned with qualitative phenomena. It is applicable to phenomena that can be expressed in terms of qualitative. The data gathering are purely in form of description. It is alternatively called Descriptive research.

Other type of Research

1. Empirical research - relies on intensive interpretation of data and come up with conclusion which is capable of being verified through observation/experiment.

2. Conceptual research - is related to some abstract ideas. It is used to develop new concept.

3. Exploratory research -Is conducted when a researcher explores things like gold, iron, diamond, and other mates related to mining.

4. Explanatory research - Is a research that explain about a certain phenomena

STAGE OF CONDUCTING RESEARCH

The following are the stages of conducting research.

i/ Problem identification

 ii/ Pr-surveying

iii/ Literature review

 iv/ Formulation of hypothesis

v/ Research designing

vi/ Data collection

vii/ Data analysis

viii/ Hypothesis testing

ix/ Data interpretation and preservation

x/ Report writing

 i) PROBLEM IDENTIFICATION

A problem is the question or idea of interest which ought to be answered through data collection. The researcher identifies a problem to be researched e.g Early marriage, poverty, etc.

Characteristics of a research problem

1. The research problem must be carefully selected and come from the researcher's mind.

2. Must be clear, precise and meaningful.

3. It must relate to the subject of interest e.g A Geographer can do a research on the following issues; Climate, soil, etc.

4. The research problem must be short and clear to avoid vague and ambiguity.

5. It must have variables.

Sources of Research Problem

Research problem is from the following sources

a) Personal experience

 b) Conclusion from various theories

c) Literature reviews. Practical issues

d) Deductive and inductive reasoning

 ii) PRE SURVEYING

 Researcher should make a survey of a place where the research is going to be conducted to know things like transport, weather etc.

 iii) LITERATURE REVIEW

 These involve readings of various publications to know what other scholars/researchers have done about what you are investigating. It enables the researcher to gain experience, to decide a good method to be a used, to identify the weakness and success of other researchers. Sources of literature reviews are journals/reports, books, internet.

 iv) FORMULATION OF HYPOTHESIS

This is an assumption used on what one expects to find out in the field It can be either true or false or Hypothesis is a prediction of outcome of the results. It is the statement of expected results. Research hypothesis is usually tested before the study begins. e.g Poor students classrooms attendance results to poor academic performance. The hypothesis are ; -Involvement of students in economic activities. -Poor family income. -Poor parental care.

Types of Research hypothesis

1. Null hypothesis - Is the one that is stated in negation i.e. it indicates non relationship between the variables. 2. Alternative hypothesis - Is the one stated to indicate the actual expectation. it indicates relationship between the variables.

(v) RESEARCH DESIGNING

This is the frame work of the research .This is the arrangement of conditions for collection and analysis of data in the manner that aim to combine relevance to the research purpose. It is the conceptual structure within which the study is conducted.

(vi) DATA COLLECTION

It involves collection of various information in the field research. It can be done through observation, interview, questionnaires and focus group discussion.

DATA COLLECTION TOOLS/METHODS

The following are the basic and common method to collect primary data in the field.

1. OBSERVATION

A researcher uses his/her five senses of hearing, tasting, smelling, seeing and touching to observe the phenomena and record what is observed.

Types of Observation

i) Participant/direct observation In this method the researcher becomes part of people under study he/ she participates fully on a particular event.

ii) Non – Participant observation In this method the researcher observes the action, behaviours and activities of the researched group without participating or seen by the participants.

ADVANTAGES OF OBSERVATION

- Helps to develop skills like observation and recording.

 - Data are recorded as they occur/observed.

 -It give firsthand information.

- Allows full participation of learners in teaching and learning process.

- It is a quick method of data collection.

-No bias. -Avoid language barriers.

-It is flexible to use wherever and whenever needed.

DISADVANTAGES OF OBSERVATION

- It can give wrong information especially when the respondent discovers that they are researched. -Misinterpretation of data may occur.

-Some geographical phenomena may not be easily obtained.

- It costs time and money.

-Sometime it may involve risk taking especially when you are observing people that are doing something illegal.

- It is subjective because data is based on personal observation.

2. INTERVIEW

- It is a face to face technique between a researcher and a respondent.

- It is the verbal communication/interaction between the interviewer and interviewee, designed to list the information, opinions and feelings they have on their own.

- It can be through by two ways - Face to face interview, telephone interview.

ADVANTAGES OF INTERVIEW

- The interview enables a researcher to obtain required information quickly.

- Not restricted it is flexible. - Interview can adapt to situation and gets as much information as required. - Provide data which is not possible to get through questionnaires.

- Interview method can also employ observation method.

- Interview gives/yield high responses because it is difficult for the interviewee to refuse completely to answer the question or ignore the interviewer.

DISADVANTAGES OF INTERVIEW

- It is time consuming.

- If the respondents are suspicious of the information required they can give irrelevant information. - There is an element of distortions.

- The respondent tends to be subjective.

- It cost the researcher has to travel to meet the respondents in different parts of the country. - It becomes a hindrance if the researcher wants to use big samples. Types of interviews

1. Structured interview

The type of interview in which the same question are asked to respondent

- The researcher prepares questions which he/she asks each respondent in a good order and manner.

ADVANTAGES

-A researcher can compare answer from different respondent to see their validity.

- It is possible to use quantitative analysis to analyses the date.

- It is not time consuming

DISADVANTAGES

- It is inflexible, researcher cannot ask more a part from those prepared before.

- Some hidden information cannot be obtained easily.

2) Unstructured interview

- Is a set of questions that the interviewer asks when interviewing.

- Probing is commonly used to get deeper information. The questions vary from one respondent to another.

ADVANTAGES

- More I information can be revealed because of high degrees of freedom.

- Respondent are given chances to say more on what they are asked.

DISADVANTAGES

- It is a time consuming because it involves probing questions.

- Researcher can't be able to compare answers given because different question are asked to different respondents.

- If it is not controlled/planned it may collect irrelevant information.

PROCEDURE FOR CONDUCTING AN INTERVIEW

- Create friendly atmosphere where two people can talk easily.

 - Maintain warmth and friendliness. It enables respondent to express in detail their thought and feelings.

- Be neutral in note and don't suggest any answer.

- Instill confidence and trust to the respondent by assuming his/her information given would be confidential.

 - Explain briefly the purpose of the interview.

3. QUESTIONNAIRES

These are ready written questions which are given to the respondent to be answered.

- Consists of list of questions related to the topics used to obtain the data required.

ADVANTAGES OF QUESTIONNAIRES

- Researchers gets a lot of information from different respondent and from different area in the country. - Omission of names makes the respondent to respond to the questions.

- Freedom to the respondents.

- It is well planned (structured).

- It is useful to distant respondent.

DISADVANTAGES

- It time consuming

- It is selective in natural as it is limited to illiterate

- It may lead to ensure answers when questions need opinions or personal feelings - Questions may be understood hence the respondents answer, the way they understood and provide wrong data.

 - May got lost on transit. - It is expensive to prepare.

TYPES OF QUESTIONNAIRES

I. Structured/closed

- Ended questionnaires

-Are questions which are accompanied by a list of all possible alternatives from which respondent select the answer that is best.

-The respondents are limited on answering the questions.

ADVANTAGES

- They are easier to analyze

- They are easier to administer because each item is followed by an alternative answer

DISADVANTAGES

 - Are more difficult to construct because categories must be well thought out

- Responses are limited; the respondent is required to answer the questions according to the researcher's choice.

II. Unstructured/open

 –ended questionnaires - Are question where by the respondents are free to explain the answers - They permit respondent to respond in his/her words. The amount of space provided is however an indicator of whether a brief or long answers is required

ADVANTAGES

- Allow a greater chance of responses

- Simple to formulate because a researcher does not have to come up with appropriate response categories. - Can stimulate a person to think about his/her feelings and to express what he/she consider most important.

DISADVANTAGES

 - When the respondent is fire, he/she may give information which does not answer the concerned research questions.

- It is time consuming P

ROCEDURES CONSIDERED IN PREPARING QUESTIONNAIRES

- Questions should be short and straight forward

- Question should be asked and should follow the order

- Question should be polite

- Question should be free from bias

MAIL QUESTIONNAIRES

- This is the type of questionnaires which involves mailing questions to the respondent.

- It can be through post mail

4. FOCUS GROUP DISCUSSION

Is the research method which involves intensive discussion on a particularly issue - Normally done in groups of 5-7 people - A researcher guides the discussion and records the data from what is discussed by the members. AIM: It enables the group to get additional information.

ADVANTAGES

- Low cost

- Rasher becomes an active person in the discussion

- Respondent get skills of writing , speaking and coordinating

- Makes respondents understand well the topic

- Allows critical thinking to the participants

- Makes the research topic to be live and interesting

DISADVANTAGES

- Not easy to analyze the data collected

- Very small sample is used - Selection of sample may be affected by biasness

- It is time consuming.

(vii) DATA ANALYSIS

The stage involves the following processes editing, coding, classification and tabulation of collected data.

(viii) DATA INTERPRETATION

After getting the right information the analyze data is interpreted in different statistical graphs, charts, figures, etc. That can be understood by everyone

(x) DATA INTERPRETATION AND PRESERVATION

After getting correct information about the study topic the analyzed data is interpreted and preserved in different statistical graphs and charts so that it can be understood to everyone.

(x) REPORT WRITING

Is the last step in research where a researcher communicates his or her findings to other researchers or the public.

IMPORTANCE AND RESEARCH REPORT

i. Exposes the problem and their implication

ii. Presents the outcome of research data

iii. Interprets the data

THE REPORT FORMAT

The research report should have three main parts; a) Preliminary pages b) Main body c) Conclusion

A) PRELIMINARY PAGES Saves as the guide to the reader Page

1: Title of the researcher

Page 2: Declaration; that the work belongs to the said researcher.

Page 3: Acknowledgement. (A researcher gratitude to all who are in one way, or another help the researcher to be successful).

Page 4: Table of contents.

Page 5: List of tables (if any)

Page 6: List of figures Page

7: Abstract –This summarize the whole research work. It should not be more than 120 words.

(B) THE MAIN BODY

It contains five chapters;

Chapter 1: Introduction The Chapter contain the following parts; Background of the study. Statement of the problem. Objective of the study. Purpose of the study. The scope of the study. Significance of the study.

Chapter 2: Literature Review Covers the literature review of other researchers who did a similar research in the past.

Chapter 3: Research Methodology This describe the design of the research and method of conducting the study e.g;- Population. Sampling. Location of the study area. Tools and data analysis t**echniques.**

Chapter 4: Data Presentation The parts cover the results of the findings of the research.

Chapter 5: Conclusion and Recommendations Provide detailed summary of the findings and the implications drawn from the results.

SAMPLE AND SAMPLING SAMPLE

Is the small number of population which represents the whole population

SAMPLING: Is the process of collecting samples from the population.

SAMPLING TECHNIQUES

1. RANDOM SAMPLING

It is a type of probability sampling where by every individual has an equal chance to be selected in a sample. This technique involves selecting a sample randomly from the sampling frame without replacement. E.g. it is very common in Lottery's such as Bingo and communication companies.

Advantages

- It reduces biasness.

- It is a very important method in a small population.

- The method portraits fairness in getting a sample.

- It gives equal chance to every person to be selected.

Disadvantages

- The better sample may not be chosen.

- It is very tedious or tiresome.

- It is time consuming especially when the population is high.

- It is representative in Heterogeneous population. Heterogeneous population –means a population with different characteristics.

2. SYSTEMATIC SAMPLING

It is a sampling technique where by a sample is obtained randomly but in a systematic way. It is a sampling technique which involves selection of a sample randomly at regular intervals from the sampling frame

3. STRATIFIED SAMPLING

-Individuals for the sample are selected from different strata. Example: A researchers wishes to get a sample of 20 students from 5 schools he/she will have to select 4 students from each.

4. PURPOSIVE SAMPLING:

Is the judgemental sampling in which a researcher uses his/her knowledge to choose individuals to be samples. The sample base on certain purpose e.g only engineer, male, students, youth,elders,etc.

5. ACCIDENTAL SAMPLING

–The researcher comes into contact accidentally with the individuals to form a sample.

6. SNOW BALL SAMPLING

- The researcher begins with the few individuals available, then those individual recommend others. The uses of research outputs and recommendations

1. Help to improve the knowledge of the people e.g Discovery of diseases.

2. The results help in finding problems facing society e.g Diseases, social inequalities, famine.

3. The results improve economic and social activities e.g Introduction of new breeds of cattle.

4. Research can lead to exploitation of the new resources like minerals and fossil fuel.

5. It helps to identify the specific need of each community e.g Community A needs schools, Community B needs water, etc.

6. Research results are useful in protecting and concerning the environment.

7. They are used in formulating government policy.

Question 1: Giving examples, explain how you can conduct a field research (NECTA-CSEE, 2007) Question 2: In 2007, form four students from Kibaigwa secondary school conducted a research about road accidents between Morogoro and Dodoma. Finally they submitted the report to the head of school. (a) What were the main three (3) objectives of the research? (b) Propose three (3) methods which might be used to collect data. (c) Explain three (3) problems that possibly faced them when collecting the data. research (NECTA-CSEE, 2008)

Question 3: (a) What is research design? (b) Briefly explain any four (4) types of research design. (NECTA-CSEE, 2009)

Question 4: (a) You have been requested by your community leaders to assist them in undertaking research to identify factors affecting crop production in their area. Explain the first five stages that should be followed in undertaking research. (b) Outline the demerits of research. (NECTA-CSEE (p), 2010)

Question 5: (a) What is hypothesis formulation? (b) Explain four importance of hypothesis in research. (NECTA-CSEE 2011)

Question 6: (a) What is meant by sampling techniques as used in research? (b) Briefly explain the following concepts as they are applied in sampling: (i) A sample (ii) Random sampling (iii) Systematic sampling (iv) Stratified sampling (c) Outline the procedures of conducting an interview (NECTA-CSEE 2012)

Question 7: (a) What is research? (b) Explain four benefits of conducting research. (NECTA-CSEE 2013) Question 8: (a) What is a research problem? (b) Name four sources of research problem. (c) Explain four characteristic s of research problem (NECTA-CSEE 2014)

Question 9: (a) What is an interview? (b) Analyze five things to be adhered to for a researcher to have a successful interview. (NECTA-CSEE 2015)

Topic 2: CLIMATE AND NATURAL REGIONS

Climate is the average weather conditions of an area observed and recoded over a long period of time (about 30 years). This involves systematic observation, recording and processing of the various elements of climate such as rainfall, temperature, humidity, air pressure, winds, clouds and sunshine before any standardization of the climatic means or average can be arrived at. Weather: The conditions of the atmosphere which occur at a place at specific time period from hour to hour or day to day. The weather should not be equated with climate, though they are very closely related to each other in the study of meteorology and climatology. For example when we say climate of Tanzania is hot wet equatorial climate that is the summing up of the average everyday weather conditions of the country throughout the year.

FACTORS INFLUENCING CLIMATE

a) Latitude -Influences temperatures on the surface of the earth whereby the areas nearer to the Equator experience higher temperature than those far away. -Shifting of the overhead position of the sun is determined by latitudes and has an influence on climate.

b) Altitude -Influences temperature and pressure of a region. -Low altitude regions are warmer and experience high atmospheric pressure while high altitude areas are cooler and have low pressure.

c) Distance from the sea -Has an influence in both temperature and rainfall of a region. During summer onshore winds have cooling effect on the land which is warm. -During winter the sea is warmer than the land.

d) Aspect Aspect refers to the direction in which a slope faces e.g in The Northern Hemisphere; the Southern ward slopes are warmer than the North ward facing slopes. This is because the North slopes never receive direct sunshine as the sun in this region never gets overhead. -Windward slopes of highlands receive much higher rainfall than the Leeward slopes.

e) Ocean Currents Current flowing along the Coasts tend to modify the climate of the Coastal regions. Where onshore wind blow over a cold ocean current are cooled from the below and the moisture they are carrying is condensed and dropped over the sea as rain.

f) Prevailing Winds Wind is a medium of transfer of heat and moisture over the land. If wind is blowing from a warm region, it has the warming effects over the region it is blowing across and if wind will blow from cold region it will be cold and will cool the land over which it is blowing.

g) Human Activities Like development of settlements, agriculture and construction of dams and creation of manmade lakes have influence on climate. In recent times we are realizing the effects of human activities in causing climate change, caused by clearing of forests , draining and cultivating swamp areas, emission of Chlorofluorocarbons and other gases from factories and motor vehicles.

CLIMATE AND NATURAL REGIONS OF THE WORLD

Climate is not the uniform across the World; climate varies from one place to another. Mainly Variation of temperature and rainfall influences different climatic characteristics. This gives rise to various climatic regions around the globe. Natural Regions are geographical areas with uniform physical characteristics that distinguish it from other natural regions. The four types of climate are hot, warm, cool, and cold climates. Each of these climates is further subdivided into different subtypes as it will be explained in detail below:

i. HOT CLIMATES

These are the type of climates found within the tropics, mainly between 23½° north and 23½° south of the equator. Hot climates include the following climate sub types:

1. Equatorial climate
2. Tropical continental climate

3. Tropical monsoon climate
4. Tropical marine climate
5. Tropical desert climate

Equatorial climate
Location The region is found between 0° and 5° north and south of the equator but in some regions it may extend up to 10° north or south of the equator. Examples of areas found within this region include the Amazon basin, Congo basin, the southern Ivory Coast, south Ghana, western coastal Nigeria, and eastern coastal Malagasy Republic.

Climatic characteristics
1. There are no marked seasons of the year
2. High temperature about 270C throughout the year
3. The annual temperature range is about 3°C.
4. The daily mean temperatures are about 26°C all the year round.
5. The daily temperature range is rarely more than 8°C because of the thick cloud cover.
6. Rainfall is heavy and is usually convection rain.
7. Rainfalls usually occur in the afternoons and they are accompanied by lightning and thunder.
8. The annual rainfall is about 2000mm
9. High humidity and intensive cloud cover throughout the year.
10. Crops grown are cassava, groundnuts, maize, millet, beans, bananas.
11. Human activities: Plantation agriculture, fishing, cultivation, peasantry sedentary agriculture.
12. Common animals found: Monkey, gorillas, crocodiles, and hippopotamus. NB: But areas located in highlands within the equatorial region have their temperatures modified by altitude. The temperature of some of these highland areas, e.g., the East African Highlands, is lowered to about 15°C. These regions are said to have a modified equatorial climate. Variations on the basic type of climate occur in the highland regions of equatorial Africa. The climate of most of these regions has an equatorial rainfall pattern. Tropical continental climate This climate is also known as Sudan type or Savannah climate. In the interior of the continents it is referred to as tropical continental climate. Location Location: the region is found between 5° - 15° north and south though it may extends to 250 north or south of the equator. Area found: East and Central Africa, Brazilian plateau, Venezuela, Africa and N. Australia. Climate: hot wet summer season, warm dry winter, rainfall is moderate. Torrential rainfall associated with thunderstorms in annual range of temperature increases with the distance from equator.

Climatic characteristics
1. High temperature, in hot summers (320C) and cooler winters (200C).
2. The annual temperature range is about 110 C.
3. The highest temperatures occur just before the rainy season begins.
4. Heavy rains, mainly convection, occur in the summer.

5. Total annual rainfall is around 765mm, though this increases in the areas lying close to the equatorial climate region. Similarly, rainfall decreases towards the tropical deserts.

6. Humidity is high during the hot, wet season. This climate is characterized by tall grass and trees which are more numerous near the equatorial forest region. The savannah region is suitable for herbivores animals such as giraffes, elephants, buffaloes, rhino, zebras, antelopes, wildebeests and many other animals. There are also carnivorous animals such as lions, leopards, hyenas, etc. The region also supports a variety of species of birds, reptiles and insects. People living in this region mainly engage in livestock keeping, cultivation and tourism. Also lumbering is practiced. Many tourists come from foreign countries to view the wildlife that live in the vast grassland. Numerous national parks have been established in this region. In Tanzania, for example, there are established national parks such as Serengeti, Mikumi, Selous, Tarangire, Ruaha, Saadani, Ngorongoro, Katavi and Manyara. The major crops grown in this region are maize, millet, groundnuts, beans, onions, cotton, tobacco, sugarcane, sisal, rice and coffee. Tropical monsoon climate Location The areas which mainly experience monsoon type of climate are South East Asia, Northern Australia, Southern China, and the Indian subcontinent. This type of climate is most marked in India.

Climatic characteristics

1. Seasonal reversal of winds (monsoon winds); onshore during one season and offshore during another season.

2. Onshore wind brings heavy rain to coastal regions while offshore winds bring little or no rain, except where they cross a wide stretch of the sea.

3. Temperatures range from 32oC in the hot season to about 25oC in the cool season, giving an annual range of about 7oC.

4. Annual rainfall varies greatly, depending on relief and the angle at which onshore winds meet the highlands (aspect).

5. There are three marked seasons: cool, dry season; hot, dry season; and hot, wet season. This climate can generally be described as having a hot, wet season and cool, dry season. The main human activities carried out in areas experiencing this type of climate include rice growing and livestock husbandry. Apart from rice, the other crops grown are wheat, millet, maize, and sorghum. Sugarcane, cotton and juice are important lowland crops grown in India, Pakistan and Bangladesh. The other crops grown are tea (Sri-lanka, Bangladesh and India) and rubber in Malaysia. Animals kept in this climatic region include pigs, cattle, buffalos, sheep, goats, and poultry.

Tropical marine climate

Location Regions with this type of climate are located on the east coasts of regions lying between 100 N and 250 N and 100S and 250 S. These areas are under the influence of onshore trade winds. The main areas are the east coasts of Brail and Malagasy, the lowlands of Central American and the west indies the coast of Queen land (Australia) and the southern Islands of the

Philippines.

Climatic characteristics
1. Temperature characteristics are similar to those of the equatorial climate.
2. Hot season temperature is 290C and cooler season temperature is 210C.
3. Annual temperature range is about 80C.
4. Total annual rainfall varies from 1000 mm to 200 mm depending on the location.
5. Rainfall is both convection and topographic (brought by onshore trade winds).
6. Maximum rainfall occurs in the hot season.
7. High humidity throughout the year. This climate can generally be described as hot and humid throughout the year. However, the climate is cooled by the onshore winds blowing almost everyday. The main human activities carried out in this climatic region include crop cultivation, lumbering and animal rearing. The crops grown include sugarcane, rice, banana and wheat. The animals kept are such as cattle, pigs, sheep, goats and poultry.

Tropical desert climate Location
The tropical desert climate occurs on the western margins of landmasses between latitude 20o to 30o north and south of the equator. The climate is experienced in all the major tropical deserts of the world. The hot deserts occupy about one third of the earth's surface. The principal tropical deserts occur on the continents as follows:
1. Africa: Sahara, Kalahari and Namib Deserts
2. Asia: the desert of Jordan, Syria, Iran, Iraq, Saudi Arabia and Israel, and the desert of India.
3. North America: Mohave, Colorado and Mexican Deserts.
4. South America: Atacama Desert
5. Australia: Great Australian Desert

ii. WARM CLIMATES
Warm climates border the hot tropical deserts. They occur between 300 and 400 north and south of the equator. There are four broad types of warm climates:
1. Warm temperature western margin.
2. Warm temperature continental.
3. Warm temperature eastern margin.
4. Warm temperature desert. Warm temperate western margin (Mediterranean type) This is also known as the Mediterranean climate Location This type of climate occurs between 300 N and 450 N and 300 S and 400 S on the western sides of the continents. Places experiencing the Mediterranean climate are on the coastal lands around the Mediterranean Sea (the Maghreb, Spain, Italy, Greece, Egypt and Israel), the western sides of north and South America (central California and central Chile), South Australia (Perth and Adelaide) and South Africa (Cape Province).

General characteristics
1. Temperatures range from 210 C in the summer to 100 C (or below) in the winter.
2. Mean annual temperature is about 150C.
3. Annual total rainfall varies from 500 to 900 mm.
4. Hot, dry summers and cold, wet winters. This is because westerly winds blow off shore in the summer and on shore in the winter. The Mediterranean climate can generally be described as having hot, dry summers and middy, rainy winters. The climate permits a wide range of crops to be grown, which include fruits and cereals. It is in this region that much of the world's citrus fruits are grown. Citrus fruits include oranges, lemons, grapes and limes. Other fruits grown here are peaches, apricots, plums, cherries, olives, almonds and pears. The cereals include maize, wheat, rice and barley. Agriculture has given rise to specialized industries such as wine-making, flour-milling, fruit canning and food processing industries. Warm temperate continental (steppe type) This type of climate is also known as warm temperate interior region Location It occurs in the interior of the continents, between 20o and 35o north and south of the equator. The best examples of the areas having this climate are Murray-Darling lowlands of Australia; The high Veldt of South Africa; and the central Paraguay and central Argentina (both in South America); central lowlands of north America (Oklahoma and Texas and in northern Mexico); central European lowlands, and the plains of Manchuria.

Climatic characteristics
1. Temperatures range from 26oC in the summer to 10oC in the winter.
2. The annual rainfall varies from 380 to 700 mm, depending on the distance from the sea.
3. Rainfall is convectional type and falls mainly in spring and early summer. The main economic activities carried out in this region are cattle rearing and crop growing. Tourism is also practiced. Warm temperate eastern margin (China type) Location It occurs in the eastern sides of the continents between latitudes 230 and 350 north and south of the equator. The countries having this type of climate are central China, south eastern USA, and southern Brazil, eastern part of Argentina, South Africa, southern Brazil, and eastern part of Argentina, South Africa, southern Japan, and south eastern Australia.

Climatic characteristics
1. Temperatures are about 26oC in summer and 13oC in the winter.
2. The total annual rainfall varies is about 1000 mm.
3. The rain is convectional and torrential type and it mostly falls in the summer. Temperatures and rainfall in this type of climate make it possible to grow crops and keep animals. Lumbering is also practiced in the forested areas. The crops grown include rice, maize, cotton, sugarcane and tobacco. Animals are extensively kept in Argentina and Australia. The animals produce products such as meat, milk, butter and cheese for consumption and export. Warm temperate desert This type of climate is also called mid-latitude desert climate. The areas having this type of climate include Nevada and Utah states of North America and Pentagonia in South America.

It is also found in regions that extend from Turkey, northern Iran, across the Caspian sea and Aral areas into former USSR. It is also experienced in the Gobi desert of Mongolia.

iii. COOL CLIMATES

These climates are experienced in regions between 350 north and 600 south of the equator. They are characterized by definite seasonal variations in temperature.

There are four types of cool climates:

1. Cool temperate continental (British type).
2. Cool temperate continental (Siberian type).
3. Cool temperate eastern margin (Laurentian type).
4. Temperate desert. Cool temperate western margin (British type) Location It occurs on the western sides of the continents between 450 and 600 north and south of the equator. Areas with this type of climate include North West Europe, British Columbia in western Canada, Southern Chile, Tasmania, and the south Island of New Zealand.

Climatic characteristics

1. Winter temperatures range between 20 C and 70 C, while summer temperatures range from 130 C to 150 C.
2. The annual temperature range is between 80 C and 110 C.
3. Rain falls throughout the year, with maxima in winter.
4. The total annual rainfall is about 760 mm.
5. The rain is both convectional and cyclonic in nature. People living in this region engage in a myriad of economic activities which include agriculture, mining, lumbering, manufacturing and commerce. Agriculture is of extensive type and includes keeping of beef and dairy cattle and sheep and the growing of wheat, barley oats, vegetables and fruits. In British Columbia lumbering is an important economic activity. In Tasmania and New Zealand, sheep rearing for wool and mutton is an important activity. Fruit farming, especially apples, is practiced throughout the region. Cool temperate continental (Siberian type) Location This type of climate is found extensively in the northern hemisphere. It occurs in the interiors of North America and Eurasia between 35o and 60oN

Climatic characteristics

1. Moderately warm summers (18o) and very cold winters (-19oC).
2. The annual temperature range is very high (37oC).
3. Most of the rain falls in the summer.
4. The rain is convectional type and is often accompanied with thunder.
5. The annual precipitation (rain plus snow) ranges from 400 to 500 mm. The main human activities in this region include lumbering fishing, mining and some agriculture. Cool temperate western margin (Laurentian type) Location This type of climate is found extensively in the

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Climatic characteristics

1. Winter temperatures range from -10oC to 4oC.

2. Summer temperatures range from 12oC to 24oC.

3. The annual temperature range is large and averages 24oC.

4. Precipitation (in the form of rain and snow) is distributed throughout the year.

5. Annual precipitation varies between 700 and 1000 mm.

6. Rainfall is both convectional and cyclonic. The main economic activities in this region are farming, mining, and manufacturing. The crops grown include wheat, maize, millet and soya beans. Sheep farming is important in Patagonia. Mining and manufacturing are practiced where minerals are found. Temperate desert Location This climate occurs in the interiors of Eurasia and North America, and in Patagonia (South America).

Climatic characteristics

1. Winters are very cold with temperatures often below -7oC.

2. Summer temperatures vary between 25oC and 37oC.

3. Diurnal temperature range is about 35oC while the annual temperature range is about 40oC.

4. Precipitation is very low, it averages about 250 mm.

5. Most of the rain falls in late winter and early spring. The human activities carried out in this region include mining, animal rearing and some agriculture. The animals reared are such as camels, donkeys, sheep and goats. The main crops grown in this region are date palms, oil palms, and millet. Agriculture is mostly practised in oases and along river valleys. iv.

COLD CLIMATES

Cold climates are mainly experienced in regions between latitudes 600 N and 680 N There are three types of cold climates:
1. Cold temperate western margin.
2. Cold temperate eastern margin.
3. Cold temperate continental. Cold temperate western margin Location This climate is confined to coastal areas of Scandinavia and Alaska.

Climatic characteristics
1. Short, cold summers with temperatures of about 12oC.
2. Long winters with temperatures ranging from -2oC to 4oC.
3. Annual rainfall is about 750 mm.
4. Rain falls in most months except the winter when show falls. The main economic activities practiced in this region include agriculture, mining and manufacturing. A dairy cattle farming is mainly practiced in the Scandinavian countries such as Norway Denmark and Sweden. Cold temperate Continental Location This climate occurs between 55oN and 68oN in the interior of America and Eurasia.

Climatic characteristics
1. Cold and long winters with temperatures ranging between -340 C and -450 C.1
2. Warm and short summers with average temperatures up to 210 C.1
3. Annual precipitation is very low, about 380 mm.1
4. Most of the rainfalls in summer, but in winter, precipitation is in the form of snow.

Cold temperate eastern margin
This climate occurs in the north east pacific of Russia. Climatic characteristics
1. Long, cold winters with an average temperature as low as -200 C or below.131
2. Short, hot summers with an average temperature up to 210 C or higher.1
3. Total annual rainfall varies between 500 and 1000 mm.

ARCTIC CLIMATES
 These types of climates are experienced in regions beyond the Arctic Circle (661/20 N) and around Arctic Ocean. They are also known as polar deserts. The main features of these climates are low amounts of precipitation (rain), mild summers and very cold winters. Arctic climates comprises of Tundra and Polar climates Tundra climate Location This region occurs in the

northern coast of North America, southern coast Greenland and the Arctic coast of Europe and Asia.

Climatic characteristics:

1. Very long, cold winters with temperatures ranging between -290 C and – 400 C.

2. Short, cool summers with temperatures of about 100 C.

3. Annual precipitation is 250 mm; some of it falls as snow in winter and as rain in summer.

Polar climate Location It occurs in the interiors of Iceland, Greenland and Antarctica.

Climatic characteristics

1. Temperatures are permanently below 00 C.

2. Precipitation is in the form of blizzards (now storms).

3. The winters consist of continuous night, and summers of continuous day. Because temperatures are very low, most these regions are uninhabited and hence limited human activities take place here. The natural occupations are hunting, fishing and herding of reindeer. Mountain climate This type of climate occurs in the main mountain areas of the world. The areas that experience such climates include the East Africa Mountains, the Ethiopian highlands, the mountains and plateaus of central Asia, the Alps of Europe, the Andes of South America and the Rockes of North America.

Climatic characteristics

1. Pressure and temperature generally decrease with increase in altitude.

2. Precipitation increases with altitude.

3. In areas around mountains within the tropic, temperatures may range from high at the foot of a mountain to very cold at the peak, e.g. Mount Kilimanjaro. We have seen how particular climatic conditions influence human activities. Now, let us see how specific climatic conditions are suitable for given human activities.

CHARACTERISTICS OF THESE REGIONS

 - They experience similar problems.

 - They have same geographical back ground.

- Are unified by the same certain latitudes which help in locating them over.

- Tend to have almost the same type of soil and vegetation cover.

- They have the same occupation such as a mining, agriculture and animal husbandry.

WORLD MAP SHOWING DIFFERENT NATURAL REGIONS

TOPIC 3: HUMAN POPULATION

 Population is a number of people, animals and plants (living things) living a certain area. Or the inhabitants of a particular place. Human Population Is a group of people occupying a certain geographical unit. Demography is the scientific study of human population. It covers its growth, density, distribution and movement as well as the aspect of social and economic development.

Characteristics of human population
 The following is the characteristics of human population

(i) POPULATION SIZE
 Is the total number of people living in the country; It is obtained through census.

(ii) POPULATION STRUCTURE Population Structure is the composition of a given population in terms of age and sex at a particular time. Census, vital registration or sample survey is used to obtain information on age and sex of an individual person from the entire population.

(iii) COMPOSITION
 Population composition refers to the geographical make up of persons in a given locality which includes, sex, age, marital status, education, occupation, income level, religion, ethnic group and race.

(iv) SEX RATIO
This is the number of males per 1000 females in a given population.

(v) DEPENDENCY RATIO

 Is the part of the population that is not involved in productive activities. The dependency ratio can be categorized into two;

a) Youth dependency ratio: Includes those who are under 15 years.

b) Old age dependency ratio: Includes those who are above 65 years.

IMPORTANCE OF STUDYING POPULATION
 In studying population, population data are obtained through census, vital registration and sample survey. The data obtained are useful in different ways;
1. It can encourage intensification of agricultural activities as a result of the reduction in the size of arable land.
2. The information obtained during the National Census is used by the Government for Planning Public Services e.g Schools, Hospitals, Markets, etc.
3. Enable to know the age and sex in a country e.g In Tanzania the number of female is higher than of male.
4. Enables the government to combat mortality rate which may lead to loss of man power if not well managed.
5. Migration can lead to the expansion of market for the local goods in the destination regions
6. Enable to know the number of manpower skilled and unskilled.
7. It can stimulate the diffusion of technology into the destination from other areas the people who migrate possess different skills of different environmental orientations.
 8. It can stimulate the growth of towns (urbanization) and the associated advantages.

POPULATION DISTRIBUTION

Population Distribution is the way in which people are spread out across the earth Surface. Distribution is uneven and changes over period of time. Population density is the number of people per unit of area. This describes the concentration of people in a specific area. There are places where people are concentrated in one area while the land in the neighborhood may be unoccupied. Population density is obtained by taking the number of people in a given area and dividing that number by the total area of the place. Thus it gives us the number of persons per unit area of land. Population density can be described as dense, moderate, or sparse.

FACTOR INFLUENCING POPULATION DISTRIBUTION AND DENSITY

1. Relief (Topography) where the slope is steep there is low or no population due to poor soil and nature of the land, but on gentle slope or flat surface there is high population since soil is good and mechanization can take place easily. Also low land tends to flood usually since people avoid settling in those areas.
2. Climate Areas with reliable (moderate) rain have attracted high population but where there is poor rain like in the desert there is low population. Also areas with high or very low temperatures do not attract population while areas with moderate temperature attract population (high).
3. Vegetation In areas where dense vegetation is difficult to clear like in Tropical forest of Amazon and Congo basin discourage people to live leading to sparse population or no population at all. Dense vegetation hinders penetration and development. In less dense vegetation people are attracted since they grow crops after clearing for cultivation.
4. Soil Thin, infertile and badly leached soil discourages settlement since they can't support agriculture. Good soil attracts population.
5. Mineral and energy resources Area with mineral and energy resources attract population e.g. rand of S. Africa, iron and coalfield in Europe and southern part of W. Africa where there are rich mineral deposits like diamond, oil, etc.
6. Natural Hazards Areas with natural hazards like floods in low land, earthquakes, and tornadoes are avoided by people.
7. Diseases and Pests People like settling in areas which are free of diseases and pests. There is high population in highlands of Tanzania which have healthy climate like Arusha. But areas with high incidence of disease and pests infestation like mosquitoes that causes malaria, tsetse flies discourage population settlement.
8. Social – cultural aspects Some tribes have a tradition of going to live in areas which have been left by their ancestors. Traditional beliefs like superstitions can make people avoid living in certain areas due to fear of risking their life.
9. Political factors Area with political stability and peace attract population but where there is political instability does not attract population. People avoid settled in area that has political conflict like in Sudan and Somalia.
10. Transport and communication Areas which are served with transport and communication attract high population since they can transport their goods to the markets areas. Also area where social services are ready available like in towns, unlike the rural areas where social services are poorly available.

POPULATION CHANGE

Population change is the growth or decline in population i.e Increase or decrease population can change by positive growth and negative growth. The main factor for population change;

1. Fertility rate.
2. Mortality rate.
3. Migration.

FACTORS FOR POPULATION CHANGE

1. FERTILITY/BIRTHRAT

It is also known as fertility rate. Fertility refers to the ability to conceive and produce. It is measured by counting the number of people (live births in a population). Fertility rate is influenced by factors like;

Level of education.

Urbanization.

Birth control measures.

Cultural belief.

Prestige.

Early marriage.

Source of labour.

Preference of sex.

2. MORTALITY/DEATH RATE
Is also called mortality. It refers to the number of deaths within a given population. Death rate can be categorized into;
(a) Infant mortality rate The number of death from 0-2 years.
(b) Child mortality rate Number of death of children aged between 1-5 years per 1000 live birth.
(c) Adult mortality rate Number of adults dying per 1000 of the total population. Hence; - Large scale mortality may be caused by;
Severe hunger/famine.
Diseases.
Natural disasters.
Wars.
Accidents.

3. MIGRATION
Is the movement of people from one place or region to another which results in changes of residence which may be temporary or permanent. Immigration: People come into a new area and are called immigrants. Emigration: People leave their native land for other lands and these people are called emigrants Types of migration There are two types of migration, namely; i. Internal migration. ii. External (International) migration. And these types of migration can be

permanent, temporary, voluntary and involuntary.

(i) INTERNAL MIGRATION
Is the movement of People within a country, it can be permanent, temporary, voluntary or forced (involuntary Factors influences internal migration Trade. Education Search for jobs. Settlement. Search for fertile soils.

FORMS OF INTERNAL MIGRATION
(a) Rural to Urban Migration Refers to the movement of People from rural to urban or towns search for jobs, better social services, education.
(b) Rural to Rural Migration Refers to the movement of People from rural to rural e.g Nomadic pastoralists.
(c) Urban to Rural Migration From towns to villages for investing, job purpose, setting up industries and other projects.
(d) Urban to Urban Migration From one town to another for business, better employment, education etc.

(ii) EXTERNAL MIGRATION
Is also called international, interstate or inter regional migration. Is the movement of people from their own countries to other countries.

CAUSES OF MIGRATION
There are many reasons why people choose to migrate. The following are some of them;
i. Pressure on land. People move to areas with available land for cultivation, settlement etc.
ii. Availability of employment opportunities. Move to areas where employment is possible e.g rural to rural, to work in plantations, mines,etc.
iii. Creation of wealth. People migrate to other countries with aim of making wealth quickly e.g Tanzanians move to South Africa iv. Religious conflicts. Which may result to chaos in a country
v. Political instability. Like civil wars cause people to migrate e.g Like that of Rwanda and Burundi has resulted to influx of refugees in East African countries.
vi. Natural disasters Epidemic diseases, floods, earthquakes, drought may cause people to migrate to better areas where it is safe.
vii. Forced migration People forced to move from the area e.g Asians were expelled in Uganda during the leadership or military regime of Iddi Amin, the slave trade of 17th and 18th century is an example of forced migration (Involuntary).
viii. Cultural beliefs People may move from one place to another due to cultural beliefs that are not friendly.

EFFECTS OF POPULATION CHANGE
The effect of population change are quite varied. Population change affects both the individuals as well as the nations at large. The effect can be positive or negative.

EFFECT ON THE INDIVIDUAL
A high fertility rate results in a large number of children that a family has to look after. Migration has its own effects on individuals in the number of ways.
1. Some individuals may change their life styles by becoming more sophisticated. This happens

after gaining more skills and exposure to more sophisticated lifestyles where the individual migrated to.

2. Some individuals after migrating to urban areas and getting jobs, may take a much longer time to get married.

3. When spouses are separated for long periods of time, this may lead to break up of marriages. Either spouse may engage in extra marital relationships during the period of absence of the partner.

4. Some individuals who migrate to urban areas lose their cultural values and this lead to immorality. Some turn to crime.

5. Some people saves lot of money from the income they get from working. The income is used to improve their standards of living.

EFFECTS OF POPULATION CHANGE IN A NATION

Over population is a situation where by a region or country has such a high population that it cannot be supported fully due to a strain on the available resources. In such a situation, many people live in object poverty.

1. Over population also leads to unemployment or even under development of a nation or even under employment.

2. Over population lead to poor housing and health facilities because demand for these facilities is far greater than the supply.

3. Agricultural resources are underutilized because of shortage of land and traditional land tenure systems which hinder modernization of agriculture

4. Slow industrial growth because of shortage of skilled labor. Although there is a large labor force, it is largely unskilled. NB: A large population increases the demand for food. This demand reduces the production of cash crops while increasing production of food crops. Population Data Population data means information on population. Or is the information pertaining to population and relate direct with some economic, social and demographic matters.

Sources of Population Data
There are two basic sources of population data, There are Primary sources and Secondary sources.

1. Primary sources, this is a source of population data which is obtained directly via registration of person like registration of births and deaths, data is also obtained first hand when there is population census and when sample survey are limited amount of data could also be obtained from resourceful persons.

2. Secondary sources of population data, include reports in population which are compiled and published as census reports, data is also obtained from textbooks and other reference books, atlases, magazines, newspaper, journals, periodicals and research papers. It can also be obtained from draft reports, annual reports as well statistical abstracts which are published annually and are available in government offices. Population data may also be obtained or available in the electronic media as well as on the internet. Interpretation of Population Data When population data has been collected, it is subjected to processing or analysis. It is during this process that calculations are made, these include means densities, birth and death rate, sex ratios and other relevant information population Statistics can be studied in their raw form or in a processed form by studying such information conclusion can be made and explanation sought.

 1. Population numbers and density enable the government to plan on low to allocate resources. Also the knowledge of population can be useful in solving land congestion.
2. Data birth and death rates as well as fertility and mortality enable government to plan how to provide medical services and health education, especially where the death rate is very high.
3. Data on migration can enable a government to plan how to curb influx of people into urban areas from the rural regions if corrective measure are taken, loss of man power in the rural areas would be curbed as well as reducing influx of immigrants in urban centres.
4. Knowing the number of dependents enable the government to plan for expansion of schools, medical and other social amenities to take care of large number of children below the age of 15. When the government has ideas about the number of the aged, It can budget for provision of welfare better.
5. It enable planning for creation of jobs, population census data provide information about overpopulation and under population.

Population Problems
Human population refers to the total number of people at a given place in specific period of time. Population problem refers to the problems which human population face in a certain area, these problems include;
1. Lack of development policies and laws that support family stability.
2. Lack of development of talents and capabilities of the children and youth.
3. Lack of preparedness plan for handling refugees.
4. Failure in encouraging private sectors and religious organisation to invest in provision of social services for people with disabilities as well as poor government policies on people with disabilities
5. Lack of provision of social services especially health services to adult people
6. Lack of social security measure that address problems of elders

Analysis of Population Problems
Population problems are challenges associated with the existing population. Population increases should match the capacity of resources to support the growing population. The extent to which resources are used determine whether there is over-population or under-population. Optimal population is when resources match with existing population. The effects of population change on Economic Growth, Labour, Human needs and Investment, and suggest possible solutions. Population problems arising from birth rates, deaths rates and migration have an impact on economic growth, labor, human need and investment. Example if population increases very rapid it results to availability of labour which is cheap but people with low incomes. Investment in consumer goods will increase as the result of increasing demand.

Population Policy
Population policy refers to the statement law or regulations enacted to some demographic goals. It is a deliberate effort by the government to influence the demographic factors like fertility, mortality and migration. Thus the ultimate goal of the population policy is to influence population size, composition, distribution and growth. The policy also tends to take into consideration the relationship between population and development as well as the impact on

environment condition.

POPULATION POLICY CAN BE EXPLICIT OR IMPLICIT EXPLICIT POPULATION POLICY Refer to the document or clear statement issued by the government department and its commission which is intended to control population growth and raise the standard of life of the people in the country. Explicit policies can also stem from the law, policy declaration by a party or directive issued by the President of the country. Explicit laws are well stipulated and strictly followed or reinforced. Such policies prevailed in China where the limit in the number of children was set and incentives were given to all those who could follow while penalties were given to those who did not follow. Other countries with explicit policy are Sweden and England. Hence the explicit policy is the elaborate statement that spells out the rationale objective, goals, targets policy program and implementation.

IMPLICIT POLICIES
Refer to particular law, regulation or statement, which may have direct or indirect effect on
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2. The information obtained during the National Census is used by the Government for Planning Public Services e.g Schools, Hospitals, Markets, etc.

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FACTORS INFLUENCING POPULATION DISTRIBUTION AND DENSITY

1. Relief (Topography) Where the slope is steep there is low or no population due to poor soil and nature of the land, but on gentle slope or flat surface there is high population since soil is good and mechanization can take place easily. Also low land tends to flood usually since people avoid settling in those areas.

2. Climate Areas with reliable (moderate) rain have attracted high population but where there is poor rain like in the desert there is low population. Also areas with high or very low temperatures do not attract population while areas with moderate temperature attract population (high).

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2. Mortality rate.

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1. FERTILITY/BIRTHRATE

It is also known as fertility rate. Fertility refers to the ability to conceive and produce. It is measured by counting the number of people (live births in a population). Fertility rate is influenced by factors like; Level of education. Urbanization. Birth control measures. Cultural belief. Prestige. Early marriage. Source of labour. Preference of sex.

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Diseases.

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Wars.

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v. Political instability. Like civil wars cause people to migrate e.g Like that of Rwanda and Burundi has resulted to influx of refugees in East African countries.

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vii. Forced migration People forced to move from the area e.g Asians were expelled in Uganda during the leadership or military regime of Iddi Amin, the slave trade of 17th and 18th century is an example of forced migration (Involuntary).

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EFFECTS OF POPULATION CHANGE

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5. Some people saves lot of money from the income they get from working. The income is used to improve their standards of living.

EFFECTS OF POPULATION CHANGE IN A NATION

Over population is a situation where by a region or country has such a high population that it cannot be supported fully due to a strain on the available resources. In such a situation, many people live in object poverty.

1. Over population also leads to unemployment or even under development of a nation or even under employment.

2. Over population lead to poor housing and health facilities because demand for these facilities is far greater than the supply.

3. Agricultural resources are underutilized because of shortage of land and traditional land tenure systems which hinder modernization of agriculture

4. Slow industrial growth because of shortage of skilled labor. Although there is a large labor force, it is largely unskilled. NB: A large population increases the demand for food. This demand reduces the production of cash crops while increasing production of food crops. Population Data Population data means information on population. Or is the information pertaining to population and relate direct with some economic, social and demographic matters.

Sources of Population Data

There are two basic sources of population data, There are Primary sources and Secondary sources.

1. Primary sources, this is a source of population data which is obtained directly via registration of person like registration of births and deaths, data is also obtained first hand when there is population census and when sample survey are limited amount of data could also be obtained from resourceful persons.

2. Secondary sources of population data, include reports in population which are compiled and published as census reports, data is also obtained from textbooks and other reference books, atlases, magazines, newspaper, journals, periodicals and research papers. It can also be obtained from draft reports, annual reports as well statistical abstracts which are published annually and are available in government offices. Population data may also be obtained or available in the electronic media as well as on the internet. Interpretation of Population Data When population data has been collected, it is subjected to processing or analysis. It is during this process that calculations are made, these include means densities, birth and death rate, sex ratios and other relevant information population Statistics can be studied in their raw form or in a processed form by studying such information conclusion can be made and explanation sought.

USES OF POPULATION DATA

 1. Population numbers and density enable the government to plan on low to allocate resources. Also the knowledge of population can be useful in solving land congestion.

2. Data birth and death rates as well as fertility and mortality enable government to plan how to provide medical services and health education, especially where the death rate is very high.

3. Data on migration can enable a government to plan how to curb influx of people into urban areas from the rural regions if corrective measure are taken, loss of man power in the rural areas would be curbed as well as reducing influx of immigrants in urban centres.

4. Knowing the number of dependents enable the government to plan for expansion of schools, medical and other social amenities to take care of large number of children below the age of 15.

When the government has ideas about the number of the aged, It can budget for provision of welfare better.

5. It enable planning for creation of jobs, population census data provide information about overpopulation and under population.

Population Problems

Human population refers to the total number of people at a given place in specific period of time. Population problem refers to the problems which human population face in a certain area, these problems include;

1. Lack of development policies and laws that support family stability.

2. Lack of development of talents and capabilities of the children and youth.

3. Lack of preparedness plan for handling refugees.

4. Failure in encouraging private sectors and religious organisation to invest in provision of social services for people with disabilities as well as poor government policies on people with disabilities

5. Lack of provision of social services especially health services to adult people

6. Lack of social security measure that address problems of elders

Analysis of Population Problems

Population problems are challenges associated with the existing population. Population increases should match the capacity of resources to support the growing population. The extent to which resources are used determine whether there is over-population or under-population. Optimal population is when resources match with existing population. The effects of population change on Economic Growth, Labour, Human needs and Investment, and suggest possible solutions. Population problems arising from birth rates, deaths rates and migration have an impact on economic growth, labor, human need and investment. Example if population increases very rapid it results to availability of labour which is cheap but people with low incomes. Investment in consumer goods will increase as the result of increasing demand.

Population Policy

Population policy refers to the statement law or regulations enacted to some demographic goals. It is a deliberate effort by the government to influence the demographic factors like fertility, mortality and migration. Thus the ultimate goal of the population policy is to influence population size, composition, distribution and growth. The policy also tends to take into

consideration the relationship between population and development as well as the impact on environment condition.

POPULATION POLICY CAN BE EXPLICIT OR IMPLICIT EXPLICIT POPULATION POLICY Refer to the document or clear statement issued by the government department and its commission which is intended to control population growth and raise the standard of life of the people in the country. Explicit policies can also stem from the law, policy declaration by a party or directive issued by the President of the country. Explicit laws are well stipulated and strictly followed or reinforced. Such policies prevailed in China where the limit in the number of children was set and incentives were given to all those who could follow while penalties were given to those who did not follow. Other countries with explicit policy are Sweden and England. Hence the explicit policy is the elaborate statement that spells out the rationale objective, goals, targets policy program and implementation.

IMPLICIT POLICIES

Refer to particular law, regulation or statement, which may have direct or indirect effect on population growth. Implicit policy is not as elaborate as explicit since it is somehow unclear and cannot be easily understood leading to failure in terms of implementation. Population policies, whether explicit or implicit, have the ultimate aim of influencing a country's population size, composition, distribution and growth.

PRINCIPLE TO GUIDE

POLICY IMPLEMENTATION

1. Consideration of regional and district variation with regard to the level of socio-economic development

2. Adherence to the development vision which among other things emphasize the role of the market in determining resources allocation and uses

3. Continued democratization of the political system with its intended political pluralism as symbolized in the emergence of various political parties or actors and mushroom of independent mass media

4. Thrift exploitation of the country's non-renewable resources taking consideration the needs of future generations.

5. Recognition and appreciation of the central role of the government, NGOs, private sector communities and individuals in population and development.

JUSTIFICATION OF THE POPULATION POLICY

This policy takes cognizance of the achievement, constraint and limitation of implementing post population policies as well as new development and continuing challenges.

ACHIEVEMENTS

The achievement of both implicit and explicit population policies includes the followings:

a. Considerable awareness of population issues particularly those related to reproductive health and child survival by the masses of the people for example fertility, infant and child mortality has decline overtime

b. Adoption of an explicit population policy in 1992, which recognised the links and interrelationship between population, resources, the environment and development.

c. Expansion and /or introduction of population studies in institutions of higher learning in the country

d. Increased number and capacity of NGOs engaged in population related activities including advocacy and social mobilisation, service delivery and capacity building.

e. High knowledge and use of contraceptive methods among both men and women and male involvement in family planning which has increased contraceptive prevalence from about 10 in 1980s to 16 in 1996. Comparison of the National Population policy on Family Planning Strategies in Tanzania to the population policies of other countries Tanzania is not the only country which has adopted a population policy. In the 1950's, China was overpopulated and in 1952 it became the first country to introduce a population policy. Nigeria is the most populous country in Africa and launched its first population policy in 1988.

Question 1: a) What are the main characteristics of human population? b) State the main factors that influence population distribution. (NECTA-CSEE, 2007)

Question 2 :(a) Using your knowledge of population studies, provide the meaning of urban growth. (b) Outline eight social and economic problems that result from urban growth. (NECTA-CSEE, 2008)

Question 3: With vivid examples, explain the causes of population change in the Great lakes of East Africa. (NECTA-CSEE, 2009)

Question 4: Some lakes and rivers in Tanzania are likely to lose their aquatic resources. Suggest any five (5) ways on how to overcome this threat. (NECTA-CSEE, 2009)

Question 5: Explain the environmental factors which influence population distribution in Tanzania. (NECTA-CSEE, 2011)

Question 6: (a) Describe five objectives of conducting census in a country. (b) Explain three limitation of census in African countries. (NECTA-CSEE, 2012)

Question 7: Describe the natural and human causes of biodiversity. (NECTA-CSEE, 2014)

Question 8: Give five reasons for decreasing death rates in many parts of the world. (NECTA-CSEE, 2015)population growth. Implicit policy is not as elaborate as explicit since it is somehow unclear and cannot be easily understood leading to failure in terms of implementation. Population policies, whether explicit or implicit, have the ultimate aim of influencing a country's population size, composition, distribution and growth.

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SELF CHECK

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TOPIC 4: SETTLEMENT

Settlement: is the place where people live together and engage in various social, economic, and political activities. Example: industrial activities, Agricultural activities, educational activities.

There are two major types of settlements namely Rural and Urban Settlements.

1. RURAL SETTLEMENT

The basic unit of rural settlements is a number of people and functions. In rural areas the main function or activity is agriculture. The cultivators most often live in scattered family settlement. Nature of settlement are isolated, hamlet, village and small market town.

Characteristics of rural settlements:

1 It is sparsely populated pattern of settlement.

2. Agriculture is the major activity undertaken in rural areas.

2. URBAN SETTLEMENT

The basic unit of urban settlement is the number of people and economic activities or functions. This type of settlement is mostly found in large towns and cities and is characterized with continuous buildings and different economic activities. (Trade, commerce, social and industrial). Generally urban settlement has high population density where rural settlement have low population densities

Characteristics of urban settlements:

1. The number of urban settlement and their boundaries will change overtime, depending on construction activities and change of present population.

2. The delimitation of the urban settlements are independent of the administrative boundaries.

3. Urban centre are characterized by denser engaged industrial activities.

4. Trading is a major activities under taken in urban areas.

CATEGORIES OF SETTLEMENT/SETTLEMENT PATTERNS

Settlement Pattern; is the layout of dwelling in a particular place. Settlement patterns assume a distinct form as it grows, settlement patterns may be influenced by different factors such as topography of an area and availability of suitable land for farming. Transport routes and communication lines also may influence the pattern that emerges. Human factors such as an increase in population may lead to the spread of settlements because may be searching for new land to settle on.
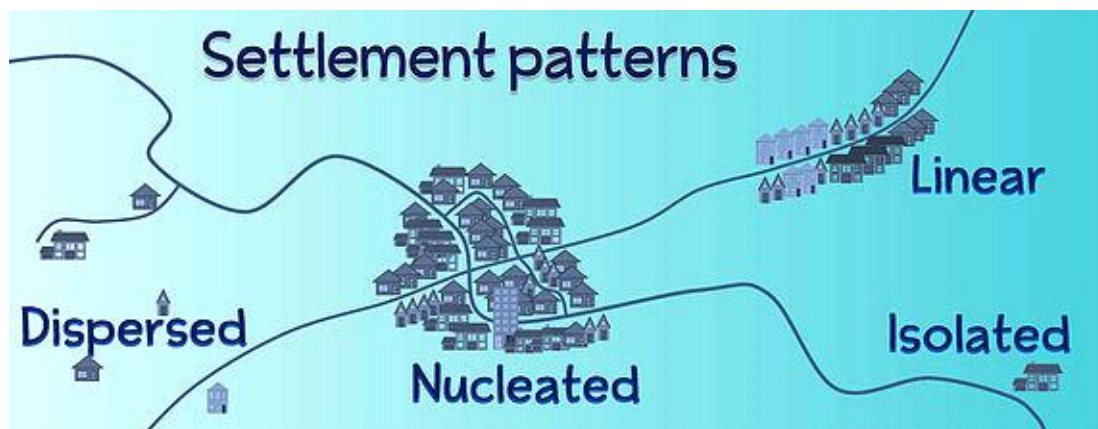
Types of settlement patterns
Nucleated Settlement Pattern
This settlement pattern consists of cluster of dwellings, shops and other buildings in one place.

The settlement is close to one another forming a cluster. Nucleated settlement may develop as a result of the availability of social services, the presence of industrial plants and limitation of building land leading to the clustering of building in one place. Settlement such as Mwadui in Tanzania and Kimberley in South Africa are nucleated mining settlements.

Linear Settlement Pattern

Linear settlement pattern may develop along communication lines or along specific physical feature such as river, the house and other structures appear to be arranged in a line along a road, a river, or canal or a coastal line such settlement may form a curve depending on the shape of the features. Linear settlements are common along the coast of East Africa, along the shores of lake Tanganyika and a long some parts of lake Victoria. They are also common along many roads and

foot paths.

Dispersed Settlement Pattern

Is also referred to as scattered settlement pattern because it consists of houses and other structures which are scattered. The houses may be separate from one another by physical features such as valleys, rivers, and ridges. Dispersed settlement is common in areas where people own individual traits of land.

FUNCTIONS OF SETTLEMENT

All settlement have certain activities/useful function to justify their existence, such function are;

i) Agriculture collective center: Where farmers produce different agricultural crops and animals are marked as agriculture collective centers.

ii) Communication center: Some of settlement functions as communication centers and they perform various communication activities.

iii) Residential function: They are place where people live and share different values and culture activities.

iv) Administrative center: These are center from which the surrounding areas are administered some of these centers can be district or regional center and local administration.

v) Commercial and market center: These are place where business takes place. These centers are composed of shops, markets and means of transport and communication like roads and telephones facilities.

vi) Mining center, they are settlements which have ground infertile mainly as a result of mining activities. These settlements are characterized by having mineral resources Example: Geita, Mwadui, Magadi and etc.

vii) Industrial settlement/Manufacturing centre: These kind of settlement are mainly formed in town areas which grow rapidly with the establishment of industries and they normally have a certain advantage to the people living around as they provide employment and goods.

viii) Fishing centers: The river sites like ports and ocean ports are important for fishing activities.

ix) Social function settlement: They provide the health and educational facilities such as hospital, and clinic likewise the area can be places of entertainment and recreational center.

x) Royal center: These are traditional residence of monarchies, kings, queens, sultans, and their consorts.

xi) Tourist centers: These centers are mainly characterized by resort and around them many hotels which enter mainly of holiday.

FACTORS FOR SETTLEMENT GROWTH

1. A nucleated settlement is where the buildings are closed around a central point such as market square.

2. Linear settlement is where the buildings are arranged in a line usually along the river or road.

3. A dispersed settlement is where the buildings are spread out or scattered. Dispersed settlement are often found in remote, sparsely populated areas.

4. The number of urban settlement and their boundaries will change overtime, depending on construction activities and change of present population.

5. The delimitation of the urban settlements are independent of the administrative boundaries.

6. Urban centre are characterized by denser engaged industrial activities.

7. Trading is a major activities under taken in urban areas.

8. It is sparsely populated pattern of settlement.

9. Agriculture is the major activity undertaken in rural areas.

10. Provision of social services, People migrate from their original places and live near areas where social services are easily available to them. Example of social services are health centres, schools, electricity and water supply.

11. Climate conditions, people settle in good climatic areas. Rainfall and temperature have a great influence from human settlement. Areas that receive abundant rainfall and favourable temperature attract more people. This is because people are able to engage in both subsistence and commercial farming such areas are Kilimanjaro, Mbeya, Ruvuma and Iringa region where there is abundant rainfall.

12. Relief, it is a strong factor influencing settlement. Gentle slopes are ideal areas for building houses as they are well drained. Steep stops are usually uninhabited because they have thin soils which inhibit growth of crops and pasture.

13. Vegetation cover, vegetation is the total plants cover over an area. Thick vegetation discourages establishment of settlement. Dense forest such as Congo of central Africa and Amazon, in South America are not accessible. They may also be habitants for dangerous wild animals and disease carrying vectors.

14. Political factor has great influence on settlement establishment. A settlement may be located in a certain area because of political reasons for example in 1967 the government of Tanzania introduced ujamaa village where by people were settled in villages.

15. Economic factor, people establish settlement in places which offer economic opportunities. Migration from rural to urban centres is mainly due to prospects for employment and trading opportunities. Mining activities also leads to the establishments of settlements for example development of Mwadui towns was the results of Mwadui Diamond mines.

16. Cultural factors, some areas may be productive but due to some cultural beliefs people may be prohibited to establish settlements on such areas. Example mumbanitu forest in Njombe.

17. Historical factor, prior to the division of Africa some communities moved in various directions and settled in their present homelands. Those movements were caused by various factors mainly wars for example Mfecane war in South Africa.

PROBLEMS FACING HUMAN SETTLEMENT

1. Shortage of land/lack of space.

2. Inadequate social services e.g. water, electricity etc.

3. Risk and disaster occurrence e.g. floods, earth equate.

4. Employment crisis due to the increase of number of people.

5. Poor housing especially in rural areas.

6. Presence of social disorder e.g. crimes, robbery etc.

7. Environment problem e.g. Pollution, erosion.

8. Poor transport and communication.

9. Rural urban migration due to shortage of employment.

10. Spreads of disease e.g. Cholera, Aid etc. This is due to shortage of water.

URBANIZATION

Urbanization involves making an area more urban or town where by increasing portion of the total population in a country settlers in town.

CAUSES OF URBANIZATION

i) Availability of employment e.g. Trade and in distort.

ii) Availability of social service.

iii) Shortage of employment opportunities in rural areas.

iv) Over population in rural areas.

v) Low level of modern contraceptive user limited education.

vi) Natural increase in birth and death rate in Urban centres.

PROBLEMS ASSOCIATED WITH URBAN GROWTH (URBANIZATION)

i) Rise of transport problem e.g. Traffic congestion.

ii) Presence of unplanned houses.

iii) Lack of enough water supply leading to serious disease.

iv) Shortage of social services e.g. School, health centers etc.

v) Overcrowding/over population leading to the crimes such as prostitution, robber and theft.

vi) Unemployment.

vii) Rural urban migration leading to scarcity of labour in rural area.

viii) Environmental deterioration.

WAYS OF OVERCOMING PROBLEMS ASSOCIATED WITH URBAN GROWTH

i) Emphasizing seriously in family planning program.

ii) Improvement of rural areas e.g. Employment opportunities, improve social services.

iii) To educated people the danger caused by rapid population growth.

iv) Provision of adequate social service on rural and urban area.

v) Improvement of the living standard of the people.

vi) Maintenance of the cleanness of the environment.

vii) Population retribution.

viii) Enforce laws to restore unpleasant settlement.

MERITS/ADVANTAGES OF URBANIZATION

i) They are center for changes e.g. Modernization and fashion.

ii) They are centers for commerce.

iii) They attract greatly tourist from different parts of the world.

iv) They are importing and exporting centers.

v) They are center of manufacturing industries.

vi) Most of urban center are administrative areas.

vii) There is good provision of social services.

viii) They are center for cultural change.

SELF CHECK

Question1: "The living environment in Tanzania is suffering at the expense of man's activities." With the Support of eight points, prove this statement. (NECTA-CSEE, 2008)

Question2: What are the possible human factors which may influence the development of nucleated settlement pattern? (NECTA-CSEE (p), 2010)

Question 3: Examine eight factors which led to the growth of settlements in different parts of a country (NECTA-CSEE, 2014)

Question4: With the aid of examples, describe six factors affecting growth of settlements in Africa. (NECTA-CSEE, 2015)

TOPIC 5: ENVIRONMENTAL ISSUES AND MANAGEMENT

Environment refers to all external conditions surrounding an organism and which have influence over its behaviour and activities.

IMPORTANCE OF ENVIRONMENT
a) To support the life of living organisms. Environment contains all resources which sustain life of living organisms for example water, soil, gases and minerals.
b) Some of landscapes, water bodies and Flora and Fauna are pleasing to the eyes hence accelerate to the development of tourism activities.
c) Supply of raw materials and energy necessary for production and consumption.
d) Absorption of the waste products of the social and economic activities. This absorption is done through air, soil or water

ENVIRONMENTAL PROBLEMS
Environment problems these are hazard, disasters or calamities that result into destruction of environment Examples of Environmental problems includes
i. Environmental pollution.
ii. Loss of biodiversity.
iii. Soil erosion and land degradation.

iv. Desertification.
 v. Flooding.
 vi. Acid rain.
 vi. Harmful radiation.
viii. Drought

 ENVIRONMENTAL POLLUTION
 Environment pollution is the introduction or addition of any substance or situation that is harmful or not required to the environment i.e. Addition of unwanted material into environment. Pollutant These are substance or materials that caused pollution i.e. Pollutant are material that pollute environment

FACTORS WHICH LEAD TO THE INCREASE OF ENVIRONMENTAL POLLUTION
1. Rapid pollution growth in the world especially in the thirds world countries this led to the increase rate of production of waste and problem in the managing of the waste.
2. The increase level of poverty in the developing country. This made people uses cheap energy resources that cause air pollution like charcoal and fuel wood. Rapid advance in technology that has led to the development of supplicated industries which emits a lot of gases and waste
3. Development of transport network that has net to the development and increase number of cars that emits a lot of fumes smokes.
4. Increase in political conflict that forces people to keep on migrating from place to place end up polluting the environment as well as the use of bombs and nuclear weapons.
5. Advancement of Science and Technology.

CLASSIFICATION OF ENVIRONMENTAL POLLUTION
 Environment pollution can be classified as follows
a) Air pollution
b) Soil/land pollution
c) Water pollution
d) Noise pollution.
 a) AIR POLLUTION
 Is an addition of waste material into air, Air is an important resource in sustaining life, without it there would be no life on earth. It is a mixture of gases surrounding the earth. These gases are

such as nitrogen, oxygen carbon dioxide and others gases.

CAUSE OF AIR POLLUTION

A) Natural causes

i) Volcanic eruption. That gives out dust ashes and gaseous like sulphur and carbon dioxide.

ii) Wind, that raise the dust and pollen to a certain levels. Dust has chemical that are toxic and hence harmful to the living organism both flora and fauna.

B) Human causes

iii) Industrial activities and automobile. This process led to the emission of fumes and gases that pollute the air.

iv) The uses of charcoal, coal, firewood and fuel oil for difference purpose like cooking, lighting, smelting etc. pollute environment.

v) Construction activities. The construction of project like road construction, salting up buildings and etc. lead to introduction of dust into the air.

vi) Agricultural activities pollute the air through;- Digging in the soil that raises dust into air. - Spraying some chemicals like insecticides.

vii) Mining activities: this in also led to the introduction of dust and some gases into the atmosphere.

EFFECTS OF AIR POLLUTION

1. Reduction in amount of solar energy because of being blocked by the layer of dusts or fumes hanging in the atmosphere leading to problems in photosynthesis.

2. Transportation in plants in upset since the smoke and dust setting on the leaves block the stomata. 3. Occurrence of global warming as the result of trapping of heat energy from the sun by the green houses gases.

4. Death of plants and animals due to poisonous gases.

5. Destruction of Ozone layer.

6. Reduction of air dirty.

7. Occurrence of acidic rainfall when gases like carbon dioxide and sulphur dioxide mix with rainfall.

8. It can causes bad and irritating smell keeping people in residence area uncomfortable.

9. It can causes dangerous disease like skin cancer.

MEASURES TOWARDS REDUCING AIR POLLUTION

i) Planting trees which absorb gases like carbon dioxide and prevent fast movement of air that lead to the introduction of dust into the atmosphere and destruction of Ozone layer.

ii) Improving the combination system in the engines so that fuel can burn easily.

iii) Reducing number of small cars or industries.

iv) Finding out alternative sources of energy instead of depending on the charcoal, fire wood, and fuel wood. v) Government policies should be active and strict laws should be passed to ensure proper management of resources.

vi) Land filling when dumping the wastes so that when they decompose they cannot lead to the emission of gases like methane into the Atmosphere

b) SOIL POLLUTION

Soil pollution is the process of introducing or adding any unwanted material in the soil. or Is the process of adding harmful material into the soil or earth surface which then led to the loss of soil fertility.

SOURCES OF SOIL POLLUTION

The main causes of soil pollution can be categorized as follows

a) From the atmosphere: the pollutants are introduced into the soil through the acidic rain. Acid rain leads to the increase of acidity into the soil which later on destroy the soil structure. Acidic rain is predominant in the industrialized countries like Germany Eastern Canada and USA.

b) From the industries: Some chemical such as radioactive material and metals can be introduced into the soil and render the soil units for Agriculture.

c) From the home steeds: Some waste from homes like bottles, metallic material plastics baby's cans etc. which are dumped into the soil they lead to soil pollution.

d) From the farms: There are chemicals which include pesticides like DDT crop remains and fertilizers when all these chemicals get into the soil they lead to the soil pollution. Likewise irrigation activities can lead to soil pollution especially when applied in steep slope areas for a long period of time.

e) Mining activities: On the other hands mining activities can lead to the introduction of some rocks. Fragments into the upper layer of the soil which then leads to the soil pollution

EFFECTS OF SOIL POLLUTION

i) Death of animals (Biota) since some chemicals affect plant and animal cell for instance organism like bacteria which are mainly used for decomposition of some materials to form

Humus.

ii) Decline in Agriculture as a results of poor production caused by poor plant growth. Poor plant growth takes place due to the decline in soil fertility in turn to the occurrence of famine which leads to the poor health and death of people.

iv) It can lead to water logging and flooding because of poor drainage caused by the soil pollution which tends to create an impermeable layer of substance in the soil.

v) Change in soil structure as some of the mineral and nutrients are dissolved by acidic materials.

vi) Migration of people to other areas which have not been affected by soil erosion.

vii) Change in soil color which causes problems in the soil classification and determination of land uses.

MEASURES TO BE TAKEN IN ORDER TO REDUCE THE RATE OF SOIL POLLUTION

i) Reducing or stopping the uses of chemicals in agriculture like DDT and used killers.

ii) Increase of manure instead of industrial fertilizers.

iii) Recycling of wastes rather than dumping them in the soil.

iv) Launching afforestation and reforestation programmers which can reduce soil erosion.

v) Control of population so as to reduce the rate of production of wastes that lead to the pollution of soil. Population control can be done through family planning.

vi) Educating people on how to undertake their activities properly.

vii) Radioactive materials should be dumped so deep in the ground. Method like crops rotation use of organic manure and switch the traditional system like shifting cultivation.

viii) Formulating strict policies that govern on how to dump the wastes. Fines and punishment should be impressed those who dump the waste randomly.

c) WATER POLLUTION

Water pollution; Refers to the addition or introduction of unwanted materials or substances in the water which has negative effect of animal and plant. Polluted water is not fit for human

consumption like drinking unit treated first.

WAYS THROUGH WHICH WATER CAN BE POLLUTED
 1. Disposal of untreated sewage into the water bodies. The sewage can be form homestead. Institution like schools, hotels and hospitals.
2. Dumping of wastes from industries into the water bodies these can be either liquid or solid form.
3. Some chemicals and other wastes from the farms ear get into the water bodies through the surface turn off or by deliberate dumping by human being leading to water contamination.
4. Oil spills from the leaking oil containers or pipes. This happened in the Indian Ocean where there are some oil spills from TIPPER in Dar es Salaam in 1990s oil forms a uniform over on the surface of water.
5. Fishing activities, some fishermen tend to use harmful chemicals in fishing which lead to water pollution.
6. Breaking of rocks along the coastal areas or near other sources of water using explosives like dynamite which in turns leads to the dying of marine organisms including fish.
7. Introduction of dust into the water sources mainly due to wind action. This is also another way into which water can be polluted.

EFFECTS OF WATER POLLUTION
 1. Water pollution can lead to the death of plants and animals if the pollutants and poisonous or causes the rise of temperature to extreme levels.
2. Spread of disease like cholera, diarrhea, dysentery and typhoid.
3. Oil spills kills aquatic organisms because it prevents oxygen from penetrating into water, organisms die because of lacking oxygen.

4. Water pollution leads to the emission of soil smells that causes discomfort to the people round the water body. The soil smell is caused by decomposition of the organic matter introduced into the water body.

5. Decline of tourist activities due to the fact that tourist who depends on water bodies for swimming will find difficult due to the fact that water bodies has been polluted (i.e. presence of toxic chemicals)

6. The color of water changes. The water becomes under due to the presence of impurities.

7. Multiplication of sea weeds as a result of the increase in nutritious from the wastes in water.

8. The death of fish leads to the loss of valuable sources of protein to human being.

MEASURES TOWARDS WATER POLLUTION CONTROL

1. Encourage the proper use of fishing methods rather than using chemicals, since chemicals end up killing different fish, animal and plant species.

2. The oil container and pipes should be kept properly and frequently inspected so as to avoid the problem of soil spiller

3. Population controlling the population number of people will reduce the amount of water produced.

4. Reduction in the uses of fertilizers and chemicals in agriculture organic agriculture should be encouraged in which manure is used

5. The government and the NGO'S should cooperate in educating people on how to use water, conserve it and where possible they should assist financial in trying to prevent the problem of water pollution.

6. Water should be kept in a clean containers or reservoirs and be covered flighty to avoid contamination

7. Breaking of rocks using dynamite should be discouraged and hence alternative ways should be applied.

8. Dumping of wastes on the land should be hand in hand with land filling method since random throwing of it leads to water pollution

9. There should be recycling of wastes rather than throwing them into the water bodies.

d) NOISE POLLUTION

This refers to the disorganized sound produced from different activities.

CAUSES OF NOISE POLLUTION
 i. Motor vehicles
ii. Construction activities
iii. Bombing activities iv. Machines in factories

 EFFECTS OF AIR POLLUTION
 i. Mental and physical illness

ii. High blood Pressure problem
iii. Death on organism

2. LOSS OF BIODIVERSITY
Biodiversity: Refers to a variety of species of living organisms both plants and animals (flora and fauna). Loss of biodiversity: Refers to the disappearance of different plants and animal species in a particular geographical unit or community. Ecosystem: Means is the natural system in which plant (Flora) and animal (fauna) interact with each other and the non-living environment

CAUSES OF LOSS OF BIODIVERSITY
Floods which kill most of the organisms at the place where they occur Pests and diseases tend to kill large number of organisms. Landslides and other types of mass wasting Earthquakes kill organisms in large number. Wars; when wars breakout the weapons kill not only people but also other organisms. Pollution, poison of air, water and soil lead to the death of living organisms. Illegal fishing when people use dynamites, bombs and poisoning lead to death of fish and other organisms. Poaching, this is the illegal killing of wild animals eg, killing of Elephants, Rhino and Zebra for various purposes. Extent of loss of Bio diversity The rate of loss of biodiversity is very great in the world today because of rapid expansion of human activities.

EFFECTS OF LOSS OF BIODIVERSITY
Change of climate of the world due to death of plants and organisms which can regulate the temperature and rainfall of the area. Loss of wild life and hence affect tourism activities. Desertification due to death of plants, Lack of food, the death of plants and organisms lead to the shortage of food

3. DESERTIFICATION
Desertification; is the process in which the fertile land is demanded and degraded to produce or initiate desert.
CAUSES OF DESERTIFICATION
• Overgrazing, overgrazing was not a problem long ago because animals would move in response to rainfall. Now, animals can graze in a single area for a long time.
• Farming of arable land. Farming of arable land is causing desertification worldwide farmers are clearing arable land and using it takes away the richness of the soil
• Incorrect irrigation in arid regions causes a build up of salt in the soil. This is commonly used in poorer areas farmers use poor techniques because of lack of water.
• Deforestation since it involve cutting down of trees without planting more trees causing the land to be bare that the soil can be easily carried by the wind
• Natural drought cycles have been responsible for the advance of the desert. Drought leads to loss of soil moisture and hence death of different plant species.

• Increase of population in some countries has led to clearing of forested areas for cultivation in order to increase food production, settlement purposes, construction of infrastructures.

EFFECTS OF DESERTIFICATION
1. It leads to decline in agriculture. This is because of drought condition that causes water problems when there is poor precipitation plant growth is inhabited leading to poor food production.
2. Migration of people from affected area to productive land area. People and other animals are compelled to move from areas with scarcity of water to areas that experience enough rainfall.
3. The desert advance acceleration of soil erosion which leads to deforestation and loss of arable land. Erosion also affects different structure like building bridge, roads and railway line.
4. Leads to the loss of important species of trees and animals as well as organism like bacteria.
5. Scarcity of water makes travel long distance in search for water for domestic uses like cooking, drinking, washing.
6. The desert also contribute at high rate the destruction of wild life animals and species which in turn leads to decline of tourist industries in the country .This happens when animal die or migrate away or when lakes and rivers dry up.

MEASURES TO BE TAKEN IN ORDER TO MINIMIZE THE RATE OF DESERTIFICATION
1. Alternative source of energy should be used in the developing countries especially in natural areas where the majority live. Alternative energy includes solar energy, wind power, bio gas and hydroelectric power.
 2. The local people should be educated on how to conserve vegetation. Some programs like afforestation and reforestation should be encouraged in order to mitigate them.
3. The government should advice some substantive policies whose objectives are to lay down principles to guide development and control of forests.
4. The government should encourage forest conservation by avoiding deforestation.

4. LAND DEGRADATION (SOIL)
Land degradation refers to the deterioration of the quality of land (soil) through the loss of fertility, soil pollution erosion and mass wasting. Loss of soil fertility This refers to the decline in

the soil ability to support plant growth due to the lack of plant nutrients necessary for growth.

CAUSES OF SOIL INFERTILITY

1. Leaching process: This process contributes to the soil infertility due to the fact that nutrients which are necessary for plants growth and washed away.
2. Over cultivation: In a certain area caused by the rapid population growth. The crops grown on the some pieces of land for a long time lead to depletion of nutrients.
3. Monoculture: That involves cultivation of one type of crop without crop of inter cropping. Nutrients are used up without replacement and the soil structure can be destroyed rendering the soil unstable.
4. Soil erosion: Which accelerated by poor land management like deforestation feat cultivation on the slopes etc.
5. Mass wasting: That leads to the loss of the upper layer of soil and its nutrients
6. Severe loss of soil water through excessive evaporation especially in arid and semi-arid.

SOIL MANAGEMENT AND CONSERVATION

Soil management Refer to the skillful uses or wise utilization and control of quality of soil (land resources) Soil conservation Refers to the process of preserving soil for proper and sustainable use.

MEASURES OF SOIL MANAGEMENT AND CONSERVATION

a) Educating people so as to promote and encouraged land management skills among them this has to be undertaken by the government collaboration with NGO'S and some individual.
b) Training and encouraging farmers to uses proper farming methods like crop rotation counters roughing and inter cropping Planting of cover crops forestation and reforestation in order to check soil erosion.
c) Reducing or stopping the uses of industrial chemical which tend to accumulate in the soil and causes soil pollution.
d) Waste products should be recycled rather than dumping them in the soil.

e) Destocking animal members should be reduced or controlled so as to avoid overgrazing that leads to destruction grass.

f) Encouraging dry farming that involves mulching in order to reduce loss of water through evaporation

g) Land filling with bush wood should be used where the soil has been severely eroded producing gullies.

h) Population should be controlled so as to discourage excessive exploitation of resources which in nature leads to land degradation

i) Alternative energy resources should be exposed and used effectively to avoid the excessive exploitation of forest and oil which causes hazard to the environment.

j) Radioactive materials should be dumped very deeply in the soil to prevent the upper soil layer from being high affected.

k) Terracing and contraction of some stone lines should be undertaken so as to control the movement of water and forces it to get into the soil rather than flowing over the land.

5. ACIDIC RAIN

Acidic Rain results from solution of gases like carbon dioxide that react with water to form acids. Therefore acidic rain is rain containing more acids than the normal amount. Acidic rain It is formed in the air from Sulphur dioxide and nitrogen oxide which are emitted by thermal power stations, Industries, Motor vehicles, burning of coals and also industrialisation.

EFFECTS OF ACIDIC RAIN

1. It led to the increase of acidity in water bodies hence killing of aquatic animals and plants
2. Reduction of the rate of soil fertility due to the increase amount of acidity into the soil.
3. Increase the rate of leaching process.
4. Destruction of different structure like buildings, bridges, railways as result of the corrosive action of acid on paint and rocks containing calcium.
5. Sulphur acid lead itching and irritation of eyes in human beings and animal
6. Erosion of limestone rock lead to the formation of features like sink holes dollies and garpikes

MEASUREMENTS TO COMBAT THE PROBLEM OF ACIDIC RAINFALL

i) Spraying the trees to wash off the acids and adding of time to the soil lakes and rivers to reduce acidity . The good example is Germany, UK and Scandinavia, countries where this process has been used advice.

ii) Reduction of emission of Sulphur dioxide and nitrogen oxide by using non fossil fuel, coal which contains less Sulphur, removing Sulphur from coal.

iii) Introducing new boilers in power station which can burn Sulphur dioxide into ash.

iv) Trapping Sulphur dioxide from the waster gases and spraying it with water so that it can form sulphuric acid which can later be neutralized by adding line.

v) Using alternative sources of energy which do not pollute the air the country can turn the coal –

fired power station into gas fired power.

vi) Recycle the waste to avoid unnecessary champion action that lead to the production of Sulphur gas

vii) Strict policies should be formulated to restrict the case of energy that leads to emission of Sulphur dioxide.

6. FLOODS

Refers the period of high river discharge or over flow of water along the coast due to extremely high tides and storm waves

CAUSES OF FLOODS

i) Flood occur due to the collapse of reservoirs like dam, emergence of spring, melting of ice and breaking of the water pipes

ii) Also flood can occur due to the heavy rainfall that take place in a particular place and they affect so much the law land area especially where vegetation been cleared . They occur most frequently in the humidly region like equatorial areas.

FACTORS THAT CAN ACCELERATE FLOODING IN LAW LAND AREAS

1. Shallowness of the soil due to the presence of the impermeable rock layer just near the surface.

2. Earth quakes that place below the sea tends to lead to the formation of large waves – flooding

3. Damming of the river by human being by lava spread out during volcanic eruption.

4. Blocked up drainage system in town and cites can lead to the flooding

5. Shallowness and name lines of the river system can also lead to flooding

6. Cleaning of vegetation accelerate flooding because on a base surface water runs freely to the stream

7. It can also take place where the rives has many bends

IMPACTS OF FLOOD

1. Death of people and animals for example the frequent flood in Bangladesh has claimed the

death of many people leading to depopulation.

2. Destruction of farm land they can be destroyed by running water leaching to devastation of crops.

3. Outbreak and spread of disease especially water born disease which then affected the health of people and sometimes death.

4. Floods also lead to the demolition of houses rending people homeless.

5. Silting of dams and other water resources resulting in the problem of water conservation and inadequate water supply.

6. Flood can lead to soil and air pollution

7. Occurrence of the soil erosion and the occurrence of lands.

8. Destruction of infrastructure like railways, roads and bridges.

9. Floods bring problem of industrial location in a particular place,.

10. It leads to migration of people who move as refugees

11. Destruction of various economic sectors like farms and industrial structures this lead to occurrence of poverty in the country.

12. Destruction of transport system hinders the movement of goods and services from one place to another.

RESPONSE TO THE OCCURRENCE OF FLOOD

1. There should be proper management of the watershed catchment areas through planting trees people should be allowed to settle in the catchment areas

2. Construction of dams across the river channels helps in combating the problem of flood which affects the low land areas.

3. The stream of the rivers should be deeper widened and straightened so as to increase the speed of the river down the slope to the sea.

4. People should be frequent inspection and cleaning of the drainage by flooding.

5. There should be frequent inspection and cleaning of the drainage system.

6. Availability of rescue team which is skilled and actives in rescuing people affected by floods

7. International cooperation should be intensified so as to improve the techniques of combating this environmental problem.

7. DROUGHT

Is a state on an area facing prolonged condition of dry without precipitation or a long period of dry weather. Drought and desertification have something in common in terms of occurrence and affects.

CAUSES OF DROUGHT
Natural cause

i) Wind system dynamics. Wind system that are dry since have blow across very narrow water mass stretch cause drought as they have not picked enough moisture for rain formation; Example

Harmaton wind of West Africa has contributed to the occurrence of drought condition particularly in the Sahara region.

ii) Shifting position of the overhead sun. As a shifting of over head sun takes place then rainfall regime shift. It shift in the northern hemisphere there occur dryness in the southern hemisphere

iii) Location of some place: Some place is located in the wind side of the mountains and therefore experience dryness. Good example is Namib desert

iv) Natural fires: There is the fire caused by natural hazard like lighting of and volcanic eruption.

v) Rain shadow effect produced by high mountain ranges

Man induced cause

These are activities carried all by man

i) Lumbering that leads to deforestation due to excessive cutting of trees

ii) Bad agriculture practices like overgrazing, over cultivation and shifting cultivation.

iii) Establishment of new settlement areas due to the increase in population lead to cutting of trees.

iv) Mining activities and construction of dams can also cause deforestation.

v) Industrial activities and crops have an impact on the occurrence of drought

vi) Low level of technology and poverty there has led to occurrence of drought.

vii) Casual burning of natural fire due to eruption of volcanoes.

IMPACT OF DROUGHT

i) Drought has led to poor supply of water for domestic uses, agricultural uses and industrial activities.

ii) Disappearance of vegetation and animal species

iii) Poor supply of energy and power to some people who depends on fire wood as the man source of energy

iv) Drying of water bodies due to excessive evaporation

v) It has facilitated desertification process Migration of people from one area to another

vii) Decline of industries especially food processing industries that depend on agricultural production

viii) Women harassment due to the fact that women are forced to move long distance in search for fire wood.

MEASURING TO COMBAT THE PROBLEMS OF DROUGHT

a) Embarking an forestation programmers the trees moisture to the atmosphere and hence led to rain formation

b) The uses of proper farming method which do not deplete vegetation Control of population should be encouraged so as to avoid the excessive exploitation of vegetation

c) The water conservation centers should be established like dams so as to promote irrigation streams

d) Farmers should be given proper education on how to conserve water resources sustainability to avoid environmental degradation

e) Strict policies should be instituted so as to restrict excessive use of trees

f) There should be the alternative energy sources like solar energy, wind energy, and Geothermal.

GLOBAL WARMING/GLOBAL CLIMATIC CHANGE

The world climate changes "Refers to all form of climatic inconsistently but because the climate is never static the terms is more properly described as a significant long term abnormal fluctuations in terms of precipitation wind system and all other aspects of the earth's climate. For quite long period of time the world has been experiencing global climatic changes including extreme cooling or extreme warming of the atmosphere.

CAUSES OF CLIMATIC CHANGE

i. Variation of solar energy It is estimated that the solar output increase at the rate of 1â—¦c per century. This led to the decrease or drop in temperature.

ii. Variation in atmospheric Carbon dioxide The higher the level of atmospheric Carbon dioxide the warmer the global temperature

iii. Volcanic eruption It has been accepted for some time that volcanic activities have influenced climate in the past and continues to do so. World temperatures are lowered after any large single eruption, this is due to the increase in dust particles in the lower atmosphere which will absorb and scatter more of the incoming radiation.

iv. Changes in oceanic circulation, this affect the exchange of heat between the oceans and the atmosphere. This can have both long term effects on the world climate and short term effects.

v. Composition of the atmosphere Gases in the atmosphere can be increased. At present there is increasing concern at the buildup of Carbon dioxide and other greenhouse gases like CFC's in the atmosphere, which are blamed for the depletion of Ozone in the upper atmosphere hence global warming.

GLOBAL WARMING AND GREEN HOUSES PHENOMENA

Global warming: This is the unusual increase in temperature of the earth's atmosphere which is caused by the green houses effect. Greenhouse effect: Refers to the situation in which the atmosphere traps and retains heat energy from the sun in the lower level leading to the rise in temperature.

EFFECTS OF GLOBAL WARMING AND GREEN HOUSE

1. The rise in temperature has led to the melting of ice in various parts of the world e.g. The cap at the peak of Mt Kilimanjaro has decreased in size due to the effect of global warming

2. The melting of ices has led to the increase of water in the sea and hence the sea level rises. As

results of those phenomena some of coastal areas are flooded.
3. Global warming has led to the occurrence of strong storms in different parts of the world that kill people and destroy properties.
4. Some cold areas have become warm such that tropical crops are grown.
5. Disappearance of some animals and plant species due to the failures to adopt the abrupt in temperature.
6. Global warming has caused the occurrence of precipitation in other areas which is used to be dry due to the changes in hydrological cycles.
7. Decline of production due to drought and desertification process which then leads to poverty and death of people 8. Spread of disease like skin cancer, malaria and other.

MITIGATING MEASURES AGAINST GLOBAL WARMING AND THE GREEN HOUSES EFFECT

1. Discouraging the uses of burning of material that release harmful greenhouse gases such as CO_2, CFC's 2. Alternative sources of energy, which are environmentally friendly, should be encouraged e.g. geothermal, power, solar energy, and wind energy.
3. Formation of an international policies and cooperation among different nations in the fight against air pollution.

WASTE MISMANAGEMENT

Is the poor disposal of wastes on undersigned areas. Examples of wastes are solid (bottles, plastic materials, iron). Liquid (Sewage from latrines, oil). Gaseous

ENVIRONMENTAL CONSERVATION

Environmental Conservation refers to the protecting of environment from being destructed through practicing various ways of environment protection such as destocking, afforestation and planting of cover plants.

Ways of Conserving the Environment include:

• Destocking, refers to the process of reducing number of animals on the environment because when the number of animals increase on the environment, they can feed on all the plants which help to prevent soil erosion or landslides.
• Afforestation and Reforestation refer to the process of planting trees in bare land and re planting trees in the presence of other trees.
• Control industrial gases and industrial sewage system, industrial location should be far apart from the water sources.
• Practicing proper irrigation skills. When irrigation is practiced improperly especially on the land with slope the water can wear out the nutrients and cause poor production.
• Control of industrial fertilizers instead of depending on industrial fertilizer we can use manure

since manure has no effect on the soil while industrial fertilizers add acid on the soil
• To control fishing activities, bad fishing method should be discouraged for example charging and punishing for those who practicing bad methods. Control construction of road and buildings to avoid construction of building on steep slopes because this can accelerate soil erosion.

Environmental Conservation and Management at School Level
Practice environmental conservation and management at school level This part is practically based on students in groups to practice various ways of conserving the environment such as planting trees, flowers, cleaning environment around the school campus. Responsibility of protecting our dear planet earth should starts from the domestic to international level. Schools have a very unique role in environmental conservation. Environmental management education should be incorporated in national curriculum. Also students should be nurtured to preserve environment form the primary level.

Question 1: (a) Define the term ecosystem. b) What are the major causes of the loss of biodiversity? (NECTA-CSEE, 2007)
Question 2: "The living environment in Tanzania is suffering at the expense of man's activities." With the Support of eight points, prove this statement. (NECTA-CSEE, 2008)
Question 3: Some lakes and rivers in Tanzania are likely to lose their aquatic resources. Suggest any five (5) ways on how to overcome this threat. (NECTA-CSEE, 2009)
Question 4: (a) What is meant by solid waste disposal? (b) What should be done in order to solve the problem of pollution caused by solid waste disposal? (NECTA(p)-CSEE, 2010)
Question 5: Suggest the measures to be taken in order to reduce the effects of global climate Change at national level. (NECTA-CSEE, 2011)
Question 6: Explain eight environmental problems related to population growth. (NECTA-CSEE, 2012) *Question 7:* Elaborate six importance of Mount Kilimanjaro to Tanzania (NECTA-CSEE, 2013)
Question 8: Examine six effects of environmental pollution in African cities (NECTA-CSEE, 2013)*Question 9:* Describe the natural and human causes of biodiversity (NECTA-CSEE, 2014)