**BASIC SCIENCE JSS 3**

**FIRST TERM**

## SCHEME OF WORK

**WEEK TOPIC**

1. Drug and Substance Abuse
2. Flooding
3. Deforestation and Desertification
4. Bush Burning
5. Depletion of Ozone Layer and its Effects.
6. Resources from living things/Economic Importance of Resource
7. Resources from Non-living Things: Solid Minerals, their Location and Importance
8. Light energy
9. Sound energy
10. Magnetism

**REFRENCES**

* BasicScience Made Easy for JSS Three by F.I Kehinde et al
* BasicScience Made Easy for JSS Two by F.I Kehinde et al
* STAN Integrated Science for JSS Three
* Precious Seeds Basic Science for JSS three by J.O Otugboyegaet al.

WEEK ONE

DRUGS AND SUBSTANCES

Content:

- Definition

- Health Effects of Drug Abuse on Youth

- Strategies for Living a Healthy Drug-Free Life

- Roles of National Drug Control Agencies

Content:

DRUG AND SUBSTANCE ABUSE

Drug abuse refers to the excessive or continuous use of drugs without regard for accepted medical practice. It occurs when drugs are used to incite pleasure or escape reality, especially without a doctor's prescription.

Substances can also be abused when taken beyond acceptable limits. Excessive intake of alcohol, cigarettes, marijuana, and Indian helm are all examples of substance abuse.

HEALTH EFFECTS OF DRUG ABUSE ON YOUTH

Drug and substance abuse have immediate effects such as lightheadedness, stomach upset, skin rashes, and injection abscesses. Chronic effects include:

1. After the 'high' of taking drugs, there is a 'crash' characterized by fatigue, depression, anxiety, and dependence.

2. Drug abusers often lose focus easily.

3. Drug abuse increases the rate of accidents as most drugs affect the motor nerves controlling body movements.

4. Some drugs create illusions and hallucinations, terrifying the victim.

5. Unsterilized needles are often used by abusers, exposing them to a high risk of contracting dangerous diseases.

6. Drug overdose can lead to a coma or a vegetative state unless treated promptly.

7. Victims of drug abuse are often violent and exhibit psychological instability.

Evaluation:

1. What is drug abuse?

- Drug abuse refers to the excessive or continuous use of drugs without regard for accepted medical practice.

2. What are the health effects of drug abuse?

- Health effects include fatigue, depression, anxiety, loss of focus, increased accidents, illusions, hallucinations, violent behavior, and psychological instability.

STRATEGIES FOR LIVING A HEALTHY DRUG-FREE LIFE

1. Always use drugs according to a doctor's prescription.

2. Foster positive social interactions and adopt a healthy lifestyle.

3. Reject any invitation to take unfamiliar or potentially abusive substances. Say NO to drug and substance abuse.

4. Avoid places like clubs, bars, and anti-social gatherings where drug abuse is likely to occur.

ROLES AND ACTIVITIES OF NATIONAL DRUG CONTROL AGENCIES

The Drug Control Agencies in Nigeria include:

1. NAFDAC (National Agency for Food and Drug Administration and Control)

2. NDLEA (National Drug Law Enforcement Agency)

These agencies perform essential functions:

1. Control the manufacturing of drugs.

2. Monitor sales and distribution of drugs.

3. Refill prescriptions.

4. Care for drug-dependent victims.

5. Control environments conducive to drug abuse.

6. Research methods of rehabilitating drug addicts.

7. Educate the general public on the need to avoid drug abuse.

Evaluation:

1. Name four strategies to live a drug-free life:

- Using drugs as per doctor's prescription, fostering positive social interactions, rejecting unfamiliar substances, and avoiding places where drug abuse is likely.

2. Name two drug control agencies in Nigeria and their functions:

- NAFDAC controls drug manufacturing, while NDLEA monitors sales and distribution.

GENERAL EVALUATION

1. Name four commonly abused substances and their methods of use:

- Alcohol (drink), Cigarettes (smoke), Marijuana (smoke or consume), Indian helm (consume).

2. State four ways to control drug abuse:

- Education, rehabilitation, law enforcement, and promoting a healthy lifestyle.

3. State five effects of drug abuse on youth:

- Depression, anxiety, loss of focus, increased accidents, violent behavior, and psychological instability.

4. What is drainage?

- Drainage refers to the natural or artificial removal of surface and sub-surface water from an area.

5. List five types of abstinence:

- Abstinence from drugs, alcohol, tobacco, unhealthy food, and risky behaviors.

READING ASSIGNMENT

Basic Science Made Easy for JSS Three by F.I. Kehinde et al. Chapter 4, Pages 12-13

WEEKEND ASSIGNMENT

1. The excessive use of drugs without a prescription is called drug \_\_\_

- A. abuse B. misuse C. overdose D. use

2. Which of the following is an effect of drug abuse on youths?

- A. Increased focus B. Wealth C. Depression D. Happiness

3. An agency that controls the production and distribution of drugs in Nigeria is

- A. EFCC B. NDLEA C. DSS

4. Which of the following is an example of a commonly abused substance?

- A. Water B. Opium C. Paracetamol D. Juice

5. In which of the following places is substance abuse more likely?

- A. Club B. Church C. Conference D. At home

THEORY

1. What is drug abuse?

- Drug abuse refers to the excessive or continuous use of drugs without regard for accepted medical practice.

2. State five ways in which drug abuse can be reduced among teenagers:

- Education, counseling, promoting positive peer influences, fostering a healthy family environment, and encouraging participation in extracurricular activities.

WEEK TWO

FLOODING

Content:

- Introduction

- Causes of Flooding

- Factors that Affect Flooding

- Consequences of Flooding

- How to Control Flooding

Introduction:

Floods are disastrous overflows of water from lakes or other bodies due to excessive rainfall or water input. Heavy rain causes rivers to overflow, flooding land. While floods can enrich agricultural areas with silt, deep floods can be destructive, leading to the loss of villages and more.

Controlling floods involves risks since they are natural phenomena.

Causes of Flooding:

1. Heavy rain

2. Long periods of rain

3. Saturated soil

4. Compacted or dry soil

5. Overflowing rivers

6. Lack of drainage systems

7. Blocked drainages

Evaluation:

1. What is a flood?

- A flood is a disastrous overflow of water from a lake or other body due to excessive rainfall or water input.

2. State four causes of flooding.

- Heavy rain, long periods of rain, saturated soil, overflowing rivers.

Factors That Affect Flooding:

1. Amount of water runoff

2. Rainfall quantity

3. Temperature

4. Type and condition of soil

5. Amount and type of vegetation

Consequences of Flooding:

1. Loss of lives and valuable properties

2. Destruction of crops

3. Loss of livestock

4. Spread of waterborne diseases

5. Disruption of business activities

How to Control Flooding:

1. Building dams

2. Constructing high walls along riverbanks

3. Widening rivers

4. Building reservoirs to store excess water

5. Diverting streams away from vulnerable areas

6. Implementing irrigation systems

Evaluation:

1. State four consequences of flooding.

- Loss of lives and valuable properties, destruction of crops, loss of livestock, spread of waterborne diseases.

2. State four factors that lead to flooding.

- Amount of water runoff, quantity of rainfall, temperature, type and condition of soil.

3. State four ways to control or manage flooding.

- Building dams, constructing high walls, widening rivers, building reservoirs.

SOIL EROSION

Soil erosion, the loss of soil from an area, occurs due to heavy rain or wind, resulting in gullies, landslides, and barren rocks. This process damages agriculture by washing away topsoil nutrients.

Types of Erosion:

1. Water Erosion: Caused by heavy rainfall or floods, washing away soil on slopes, creating gullies.

2. Wind Erosion: Fast-moving winds expose and carry away topsoil; planting trees acts as a barrier.

Human Activities That Cause Erosion:

- Burning bushes

- Deforestation for farming

- Construction of houses, industries, roads, and towns

Effects of Erosion:

1. Reduced soil fertility

2. Damage to roads and surfaces

3. Destruction of farmland and produce

4. Potential loss of buildings and lives

Control of Erosion:

1. Stopping indiscriminate bush burning

2. Planting trees and cover crops

3. Practicing mulching

4. Constructing terraces on sloped land

Methods of Preventing Soil Erosion:

1. Planting cover crops, grass, and trees as windbreakers

2. Creating proper canals and drainage channels

3. Building dams and stone structures to capture eroding soil

4. Constructing terraces along land contours

General Evaluation:

1. What is soil erosion?

- Soil erosion is the wearing away and loss of soil from an area, caused by heavy rain or wind.

2. What human activities contribute to flooding?

- Deforestation, lack of adequate drainage systems, and blocked drainages.

3. What is power?

- Power refers to the ability to influence or control people or events.

4. What is puberty?

- Puberty is the period during which adolescents reach sexual maturity and become capable of reproduction.

5. Explain "teetotalism."

- Teetotalism refers to the complete abstinence from alcoholic drinks.

6. What is pregnancy?

- Pregnancy is the condition of carrying one or more offspring in the womb.

Reading Assignment:

Basic Science Made Easy for JSS Three by F.I. Kehinde et al. Chapter 5, Pages 15-16

Weekend Assignment:

1. The overflowing of rivers due to continuous rainfall leads to:

- A. Erosion B. Deforestation C. Flooding D. Drought

2. Which of the following helps control flooding?

- A. Overgrazing B. Deforestation C. Damming of rivers D. Dumping of refuse

3. Which of the following does not contribute to flooding?

- A. Blocked drainages B. Overflowing rivers C. Adequate drainage systems D. Loss of lives

4. What is a consequence of flooding?

- A. Growth and development B. Increased fertility C. Destruction of livestock D. Provision of food

5. Flood is a \_\_\_ occurrence.

- A. Natural B. Man-made C. Phenomenal D. Economical

Theory:

1. List five things you can do to prevent flooding in your immediate environment.

2. What are the environmental and economic impacts of flooding?

3. Mention five ways to prevent

erosion.

WEEK THREE

DESERTIFICATION AND DEFORESTATION

Content:

- Definition of Deforestation

- Causes of Deforestation

- Effects of Deforestation

- Control of Deforestation

Definition:

Deforestation is the continuous removal of trees without replacing or replanting them. It also refers to the permanent destruction of forests to make land available for other purposes.

Causes of Deforestation:

1. Removal of trees for road construction, building houses, industries, and recreational centers.

2. Uncontrolled logging by poachers for industrial use (paper, furniture, sculptures).

3. Tree felling for domestic use like cooking.

4. Forest burning for hunting and farming.

5. Natural causes such as forest fires during thunderstorms or landslides.

Evaluation:

1. What is deforestation?

- Deforestation is the continuous removal of trees without replanting. It's also the permanent destruction of forests for other land uses.

2. State five causes of deforestation.

- Removal of trees for construction, indiscriminate logging, domestic use, forest burning, natural disasters.

Effects of Deforestation:

1. Loss of wildlife and biodiversity, leading to the gradual extinction of forest animals.

2. Contribution to climate change and global warming.

3. Loss of habitat for many animal species, especially birds.

4. Decrease in atmospheric oxygen and increase in CO2 levels, endangering plants and animals.

5. Flooding and erosion.

6. Potential starvation and homelessness due to lack of food and building materials.

7. Economic losses if raw materials from forests are no longer available for industries or exports.

Ways to Control Deforestation:

1. Afforestation: Planting trees in new areas to establish forests where none existed before.

2. Reforestation: Replanting trees to replace those removed from the forest.

3. Implementation of laws against indiscriminate logging, poaching, and forest burning.

4. Utilization of forest guards to prevent trespassers.

5. Public awareness campaigns on the importance of forest conservation.

Evaluation:

1. State four effects of deforestation.

- Loss of wildlife, climate change, habitat loss, decreased oxygen levels.

2. State four ways to control deforestation.

- Afforestation, reforestation, law enforcement, public awareness.

Importance of Forest:

1. Provision of raw materials (timber, latex, medicinal extracts) for industries.

2. Purification of the atmosphere by absorbing excess CO2 through photosynthesis.

3. Habitats for various animals, providing hides and skins for clothing and accessories.

4. Creation of employment opportunities.

5. Prevention of erosion and desert encroachment through tree planting.

Evaluation:

What are the importance of forests to humanity?

Content:

- Definition of Desertification

- Causes of Desertification

- Control of Desertification

Desertification:

A desert is a vast land with minimal rainfall and scarce plant life. Desertification is the process of transforming non-desert areas into deserts, often influenced by climate change and human activities. In Nigeria, significant portions of the northeast and northwest states are affected, including Bauchi, Bornu, Gombe, Taraba, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara.

Causes of Desertification:

1. Overgrazing.

2. Frequent bush burning.

3. Water impoundment.

4. Deforestation.

5. Increased salinity.

6. Drought.

7. Climatic change.

Evaluation:

1. What is a desert?

- A desert is a vast land with minimal rainfall and limited plant life.

2. What is desertification?

- Desertification is the process of turning non-desert areas into deserts, often due to human activities and climate change.

3. Mention four causes of desertification.

- Overgrazing, bush burning, water impoundment, deforestation.

Control of Desertification:

1. Planting leguminous crops to restore soil fertility.

2. Digging artificial grooves to retain rainfall and trap wind-blown seeds.

3. Planting trees and cover crops.

4. Public awareness campaigns to prevent desertification.

5. Implementing proper farming methods.

Evaluation:

Mention four ways to control desertification.

List five ways to control erosion.

Reading Assignment:

Basic Science Made Easy for JSS Three by F.I. Kehinde et al. Chapter 4, Page 12

Weekend Assignment:

1. One of the methods of controlling deforestation includes:

- A. Bush burning B. Logging C. Afforestation D. Clean weeding

2. The largest desert in the world is found in:

- A. Australia B. South Asia C. North Africa D. Western Europe

3. One of the following is not a method of controlling desertification:

- A. Overgrazing B. Afforestation C. Planting of cover crops D. Public awareness

4. One importance of forest trees is that they:

- A. Purify the atmosphere B. Cause soil erosion C. Destroy the ozone layer D. Lead to the loss of biodiversity

5. The planting of trees where they did not previously exist is called:

- A. Deforestation B. Desertification C. Afforestation D. Reforestation

Theory:

1. What are the benefits of forests to humanity?

2. Explain how increased salinity can cause desertification.

WEEK FOUR

BUSH BURNING

Content:

- Meaning of Bush Burning

- Practices that Influence Bush Burning

- Effects of Bush Burning

- Control of Bush Burning

Meaning of Bush Burning:

Bush burning is an agricultural practice involving the clearing and burning of bushes. Common in West Africa, it is often considered an environmental hazard despite its quick weed elimination method.

Practices that Influence Bush Burning:

1. Bush burning for hunting purposes.

2. Bush burning used in wedding ceremonies.

3. Stimulating fresh grass growth during dry seasons.

4. Burning of refuse contributing to bush burning.

5. Smoking.

6. Wind.

Evaluation:

1. What is bush burning?

- Bush burning is an agricultural practice involving the clearing and burning of bushes.

2. State five practices that promote bush burning.

- Hunting, weddings, stimulating grass growth, burning refuse, smoking, and wind.

Effects of Bush Burning:

1. Rapid spread leading to the destruction of economic crops.

2. Exposing soil to erosion, washing away soil nutrients.

3. Potential loss of valuable properties if not controlled.

4. Destruction of wildlife and forests due to bush burning and forest fires.

5. Major source of air pollution.

6. Contribution to the depletion of the ozone layer.

7. Loss of soil nutrients due to bush burning.

Control of Bush Burning:

Indiscriminate bush burning is against the law. Environmental laws have been enacted to prevent and prosecute those engaging in it. Control methods include:

1. Establishment of agencies such as FEPA, LASEPA, and NAFCON to monitor and prevent bush burning.

2. Ministries of environment regulating activities causing environmental disasters.

3. Government-enacted laws against bush burning.

4. Public education about the effects of bush burning.

5. Utilizing mass media to enlighten people on bush burning control methods.

Evaluation:

1. List five methods of controlling bush burning.

- Establishment of agencies, government laws, public education, use of mass media, and enforcing existing environmental laws.

2. State five effects of bush burning.

- Destruction of economic crops, soil erosion, loss of properties, wildlife destruction, air pollution, and soil nutrient loss.

General Evaluation:

1. What is desertification?

- Desertification is the process of turning non-desert areas into deserts, often due to human activities and climate change.

2. State the differences between bush burning and desertification.

- Bush burning is an agricultural practice involving burning bushes, while desertification is the transformation of non-desert areas into deserts.

3. What are the practices that lead to bush burning?

- Hunting, weddings, grass growth stimulation, burning refuse, smoking, and wind.

4. List the types of habitat you know.

- Forests, grasslands, wetlands, deserts, oceans, etc.

5. Why is man a higher animal?

- Man is considered a higher animal due to advanced cognitive abilities, complex social structures, and the capability to create and use tools.

Weekend Assignment:

1. Which of the following is not a cause of bush burning in Nigeria?

- A. Smoking B. Hunting game C. Farming activities D. Afforestation

2. Bush burning can be prevented through the following activities except:

- A. Establishing game reserves B. Hunting games C. Establishing of agencies D. Cultivation of a piece of land for farming.

3. The following are effects of bush burning except:

- A. Loss of forest trees B. Loss of soil fertility C. Absence of air pollution D. Killing of wildlife

4. Which of the following is not an agency of environmental protection?

- A. LASEPA B. FEPA C. UNICEF D. NAFCON

5. Which of the following causes air pollution in an area where there is bush burning?

- A. Heat B. Smoke C. Ash D. Sand

Theory:

1. Name five things that can be destroyed through bush burning.

2. Name three agencies that regulate bush burning in Nigeria.

WEEK FIVE

DEPLETION OF THE OZONE LAYER

Content:

- Description of Ozone Layer

- Importance of the Ozone Layer

- Hazards of Ozone Layer Depletion to Life

- Control Measures against Ozone Layer Depletion

- Global Warming

- Consequences of Global Warming

- Control of Global Warming

Description of Ozone Layer:

Ozone, a pale blue poisonous gas, resides in the earth's upper atmosphere. It’s a triatomic molecule of oxygen, more stable than diatomic oxygen (O2). Present in low concentrations in the troposphere, the ozone layer, located approximately 10km-50km above Earth, is formed in the stratosphere due to the action of ultraviolet rays from the sun on oxygen molecules.

Importance of Ozone Layer:

1. Essential for pharmaceuticals and synthetic lubricants.

2. Used in bleaching substances.

3. Effective in killing microorganisms in water systems.

4. Shields Earth from the sun's heat.

5. Protects living organisms from harmful ultraviolet rays.

Industrial Uses of Ozone:

1. Disinfecting laundry in hospitals and food factories.

2. Deodorizing air and objects post-fire incidents.

3. Assisting in processing plastics for ink adhesion.

4. Washing fresh produce to eliminate yeast, mold, and bacteria.

5. Manufacturing various chemical compounds.

Evaluation:

1. What is the ozone layer?

- The ozone layer is a region in Earth's stratosphere containing a relatively high concentration of ozone molecules.

2. Briefly explain how the ozone layer is formed.

- Ozone is produced when ultraviolet rays from the sun split oxygen molecules, and the resulting free oxygen atoms combine with other oxygen molecules.

3. What are the importance of the ozone layer?

- The ozone layer shields living organisms from harmful ultraviolet rays and has industrial applications.

Hazards of Ozone Layer Depletion to Life:

1. Exposure to harmful ultraviolet rays, leading to skin cancer.

2. Harm to aquatic life due to increased UV exposure, disrupting ecosystems.

3. Higher levels of greenhouse gases causing Earth's temperature to rise, altering seasons.

4. Ozone depletion contributing to global warming and related hazards.

5. Increase in toxic gases due to lower atmosphere ozone layer depletion.

Control Measures against Ozone Layer Depletion:

1. Regulation of chlorofluorocarbons (CFC) usage.

2. Reduction in bush and household burning.

3. Elimination of chemicals depleting the ozone layer.

4. Developing technologies emitting fewer dangerous gases.

5. Reduction of toxic gas emissions from household equipment.

Evaluation:

1. State five hazards resulting from ozone layer depletion.

- Skin cancer, aquatic life harm, altered seasons, global warming, and increased toxic gases.

2. State five control measures against ozone layer depletion.

- Regulation of CFC, reduced burning, chemical elimination, cleaner technologies, and lower emissions.

Global Warming:

Global warming is the prolonged increase in Earth's average temperature. Major causes include ozone layer depletion and the greenhouse effect caused by accumulating greenhouse gases like CO2, H2O, and CH4. CO2 emissions from burning fossil fuels, vehicle exhausts, industrial processes, deforestation, bush burning, and urbanization contribute to the greenhouse effect.

Consequences of Global Warming:

1. Climate change.

2. Rising sea levels.

3. Increased flooding incidents.

4. Melting polar ice caps.

5. Overall rise in Earth's average temperature.

Control of Global Warming:

1. Planting trees for carbon dioxide absorption.

2. Reducing bush and waste burning.

3. Recycling waste materials.

4. Utilizing alternative energy sources like solar and wind power.

5. Promoting the use of electric vehicles to reduce CO2 emissions.

Evaluation:

1. What is global warming?

- Global warming refers to the prolonged increase in Earth's average temperature due to human-induced factors.

2. State five sources of carbon dioxide in the atmosphere.

- Burning fossil fuels, vehicle exhausts, industrial emissions, deforestation, and urbanization.

3. State five control measures for global warming.

- Tree planting, reduced burning, recycling, alternative energy use, and electric vehicles.

General Evaluation:

1. What is a machine?

- A machine is a mechanical device that performs tasks using energy.

2. What are greenhouse gases?

- Greenhouse gases are gases in Earth's atmosphere that trap heat, contributing to the greenhouse effect.

3. State five consequences of global warming.

- Climate change, rising sea levels, increased flooding, melting ice caps, and higher average temperatures.

4. Explain why CFC is dangerous to the atmosphere.

- CFCs deplete the ozone layer, allowing harmful ultraviolet rays to reach Earth's surface.

5. How can global warming be controlled?

- By planting trees, reducing burning, recycling, using alternative energy sources, and promoting electric vehicles.

Reading Assignment:

Precious Seeds Basic Science for JSS Three by J.O Otugboyega et al. Chapter 13, Pages 79-87

Weekend Assignment:

1. The major cause of greenhouse effect is the accumulation of:

- A. Water vapor B. Carbon dioxide C. Methane gas D. Oxygen

2. Which of the following is the chemical symbol of ozone?

- A. O3 B. O2 C. CO2 D. H2O

3. Which of the following is not a consequence of global warming?

- A. Seasonal changes B. Increased heat C. Crop growth D. Flooding

4. Which of the following can cause ozone layer depletion?

- A. CFC B. Oxygen C. Water vapor D. Carbon dioxide

5. Which of the following activities will help control global warming?

- A. Burning of fuel B. Afforestation C. Increasing human population D. Urbanization

Theory

1. List five control measures taken to reduce ozone layer depletion.

2.Explain the term "green-house effect."WEEK SIX

Resources from Living Things

Content:

- Introduction

- Resources from Plants

- Resources from Animals

- Economic Importance of Resources from Plants and Animals

Natural resources encompass valuable materials found in nature, essential for human needs. These resources include air, water, plants, animals, metals, and soil, among others.

Resources are classified as renewable or non-renewable. Renewable resources, such as plants and animals, can replenish naturally. Non-renewable resources, like minerals, cannot be replaced after use.

Evaluation:

1. What are natural resources?

- Natural resources are valuable materials found in nature, serving various human needs.

2. State the two types of resources with examples.

- Renewable resources (e.g., plants, animals) and non-renewable resources (e.g., minerals).

Resources from Plants:

Resources obtained from plants include:

1. Food Crops:

- Leafy vegetables (e.g., bitter leaf, spinach)

- Fruits (e.g., orange, mango)

- Grains and cereals (e.g., rice, millet)

- Staples and tubers (e.g., yam, cassava)

- Oil plants (e.g., oil palm, groundnut)

2. Cash Crops:

- Fibre crops (e.g., cotton)

- Oil crops (e.g., coconut)

- Beverage crops (e.g., cocoa)

- Latex crops (e.g., rubber)

3. Medicinal Plants:

- Plants like Dongoyaro and kolanut trees have medicinal properties.

4. Textile Crops:

- Cotton and dye plants like indigo are used in textile manufacturing.

5. Woods:

- Trees such as Mahogany and African walnut provide wood for various purposes.

6. Ornamental Plants:

- Plants like Hibiscus and Pride of Barbados beautify the environment.

7. Compost and Manure:

- Decomposed plants contribute to soil fertility.

Evaluation:

1. List five resources obtained from plants with two examples each.

2. List four food crops and four cash crops.

Resources from Animals:

Animals provide various resources:

1. Food:

- Livestocks like pigs, goats, and fish provide meat rich in proteins and nutrients.

2. Eggs:

- Poultry birds such as chickens and ducks lay eggs, which are protein sources.

3. Dairy Products:

- Cattle produce milk, leading to products like cheese and yoghurt.

4. Bones:

- Animal bones are used for glues and ornamental items.

5. Horns:

- Horns from animals like cattle find decorative uses.

6. Feathers:

- Bird feathers are utilized for various decorative purposes.

7. Hide and Skin:

- Hides and skins from animals like sheep are used for items like belts and bags.

8. Beast of Burden:

- Animals like horses and donkeys assist in carrying loads.

9. Animal Dungs:

- Waste is used as manure, enhancing soil fertility and crop yield.

Evaluation:

State five animal resources.

Economic Importance of Resources from Living Things:

1. Source of Food:

- Plants and animals provide diverse food sources.

2. Raw Materials for Industries:

- Timber, leather, and milk serve as raw materials.

3. Medicinal Uses:

- Many plants offer medicinal properties.

4. Environmental Benefits:

- Plants produce oxygen, purifying the environment.

5. Agricultural Assistance:

- Animals aid in farming activities.

6. Economic Value:

- Plants and animals generate income for farmers.

7. Employment Opportunities:

- Agriculture and related sectors provide jobs.

8. Ornamental Use:

- Ornamental plants beautify surroundings.

9. Tourism:

- Zoos and parks with animals attract tourists.

Evaluation:

State five importance of plant and animal resources.

General Evaluation:

1. Name five plant and animal resources each.

2. Provide two differences between bones and horns

3. Define Neurone.

4. Define flooding.

5. State five effects of deforestation.

Reading Assignment:

Precious Seeds Basic Science for JSS Three by J.O Otugboyega et al. Chapter 15, Pages 95-96

Weekend Assignment:

1. Which of the following is not a plant resource?

- A. Food B. Fuel C. Latex D. Fruit

2. The following are animal resources except:

- A. Fur B. Horn C. Skin D. Fibre

3. Which of the following is the process of producing and keeping milk?

- A. Farming B. Poultry C. Dairy D. Skinning

4. Which of the following is not a cash crop?

- A. Cocoyam B. Cocoa C. Groundnut D. Cotton

5. The following are ornamental plants except:

- A. Hibiscus B. Rose C. Mango D. Pride of Barbados

Theory:

1. Briefly explain the following terms:

a) Food crops

b) Cash crops

c) Medicinal plants

d) Ornamental plants

2. State five importance of plant and animal resources.

**WEEK SEVEN**

**Resources from Nonliving Things (Solid Minerals)**

**Content:**

- Mineral Resources

- Some Mineral Resources, their Location, and Uses

- General Importance of Mineral Resources

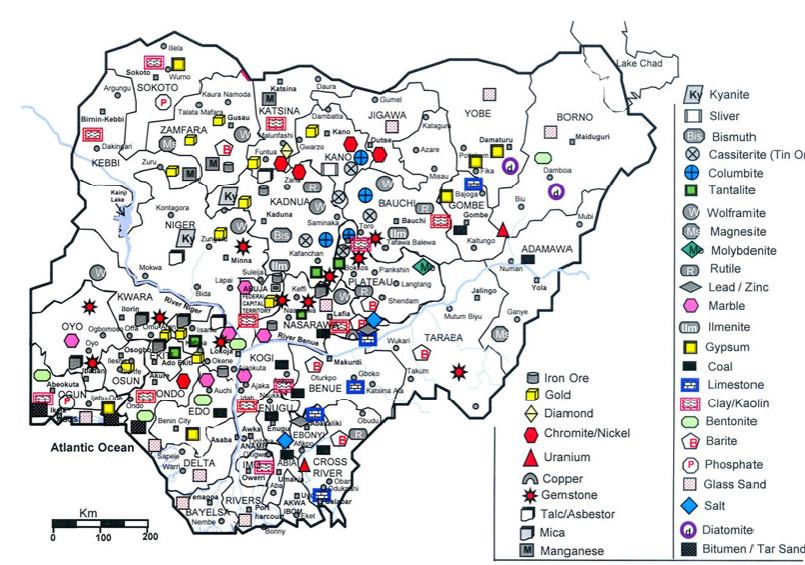
Mineral Resources

Mineral resources are natural deposits found in the Earth's crust, serving humanity's needs. Minerals can occur as single elements or compounds and may be found in solid or liquid states. Typically, solid minerals are discovered within the Earth as ores. An ore refers to a compound containing a valuable element deposited in the Earth.

Some mineral resources, their location and their uses in Nigeria are given below

|  |  |  |
| --- | --- | --- |
| **Mineral resources** | **Location** | **Uses** |
| Gold | Bida(Niger), Ondo, katsina, kebbi, | Used for decoration and making jewellery, coinage, currency etc. |
| Limestone | Ogun, Gombe, Kaduna | Used for making cement. Used as filter in paints. |
| Kaolin | Kogi, Abia, Abuja, katsina | Used for making ceramics and plates |
| Iron ore | Plateau, Benue, Kogi, Anambra | For making iron and steel. Also used for making alloys for various uses |
| Zinc | Bauchi, Benue, Akwa-Ibom, Abia, Anambra | For making roofing sheets. |
| Coal | Enugu, Benue, kogi, Ondo | Used as fuel, used industrially to produce coal gas and iron. |
| Dolomite | Plateau, Oyo, Osun, Kwara | For refractory furnace, building materials. |
| Lead | Cross river, Benue, Bauchi, | Used for making battery. |
| Tin | Cross rivers, Kaduna, plateau, Kano | For making decorative lanterns, coating of lead and steel containers to prevent corrosion. |
| Bitumen | Ondo, Edo, Lagos. | It is used for tarring roads. |
| Quartz | Jigawa, katsina, kebbi, Niger, Osun, Oyo | It is used in making glass and silica bricks; paint scouring, saops, sand paper, porcelain, paint. |
| Mica | Plateau, Osun, Ogun, Kebbi, Cross river, Borno | Used as electrical insulator, telephone condensers. Used as filters in production of tyres and tubes |
| Clay | Almost all state of the federation. | Used for building bricks, flower pots, floor tiles, fencing brickss |
| Glass sand | Rivers, Niger, Ekiti, cross Rivers, Bayelsa, Abia | It is used for making bottles, synthetic Mable and other glass wares. |

**MINERAL RESOURCES AND THEIR LOCATION IN NIGERIA**



Evaluation

1. Natural resources are substances found in nature that are valuable and useful to humans, such as air, water, plants, animals, minerals, metals, and soil.

2. Mineral resources are naturally occurring substances found in the Earth's crust that have economic value. They can exist as single elements or compounds and are essential raw materials for various industries.

3.- Limestone: Located in Edo State, Nigeria. It is vital for making cement.

- Coal: Found in Enugu State, Nigeria. It serves as a source of fuel.

- Gold: Discovered in Zamfara State, Nigeria. It is used for making jewelry and coins.

- Petroleum: Abundant in the Niger Delta region of Nigeria. It is crucial for producing fuel and various petroleum-based products.

- Lead: Located in Ebonyi State, Nigeria. It is used in making car batteries and radiation shielding.

General Importance of Solid Minerals

1. Solid minerals are essential for generating revenue for both states and countries.

2. They serve as raw materials for various industries, contributing significantly to economic development.

3. Minerals like bitumen are crucial in the construction of roads and infrastructure.

4. Some minerals, like coal, are used as sources of fuel, supporting energy needs.

5. The mining industry provides employment opportunities and income for individuals and communities.

6. The availability of mineral resources enhances the quality of life and comfort for society.

7. Nations with abundant mineral resources gain international recognition and reputation.

General Evaluation

1. Seven resources obtained from animals include meat, milk, leather, wool, bones, feathers, and hides.

2. Mineral resources are naturally occurring substances found in the Earth's crust with economic value.

3. Seven mineral resources in Nigeria, their locations, and uses are:

- Coal: Enugu State, used for energy production.

- Oil: Niger Delta region, used for fuel and petrochemicals.

- Gold: Zamfara State, used for jewelry and currency.

- Limestone: Edo State, essential for cement production.

- Lead: Ebonyi State, utilized in batteries and radiation shielding.

- Bitumen: Ondo State, vital for road construction.

- Natural Gas: Found in abundance, used for energy and electricity production.

4. Benefits of solid minerals include revenue generation, industrial raw materials, job creation, and enhanced economic development.

5. Abstinence refers to refraining from certain activities, often used in the context of abstaining from sexual intercourse.

Reading Assignment

Precious Seeds Basic Science for JSS Three by J.O Otugboyega et al. Chapter 18 Pages 105-109

Weekend Assignment

1. B. Limestone

2. D. fame

3. C. Edo State

4. B. Lead

5. B. Zinc

Theory

1. Mention seven mineral resources, their locations, and uses.

2. State five uses of solid minerals.

\*\*Week Eight\*\*

Light Energy

Content

Introduction

Light energy, a fundamental aspect of our understanding of the universe, encompasses various phenomena such as reflection, refraction, vision, and dispersion. In this section, we will explore the properties of light and its behavior under different conditions.

Properties of Light

Light can be defined as a form of energy that produces electromagnetic radiation, leading to visual sensation. It travels as electromagnetic waves, even through a vacuum, making it one of the fastest phenomena known to humanity. The speed of light, a staggering 3×10^8 m/s (300,000,000 meters per second or 299,792.5 km/s), allows it to traverse vast distances swiftly.

Propagation of Light

Light travels in a straight line, known as rectilinear propagation, until it encounters an obstacle. When light is obstructed, it forms a shadow. Objects impervious to light are termed opaque, while those allowing light passage are transparent.

Luminous and Non-Luminous Objects

Objects emitting their light, such as the sun or a light bulb, are termed luminous. In contrast, non-luminous objects, like the moon or a mirror, do not generate light but can reflect it.

Light Rays and Beam

Light waves are often referred to as light rays. Represented by a line with an arrowhead, a light ray signifies the direction of light propagation. Collections of light rays form light beams, categorized into three types:

- Parallel Beam: Light rays within this beam run parallel to each other.

- Divergent Beam: In this configuration, rays scatter from a point, often the source, a convex mirror, or a concave lens.

- Convergent Beam: Rays within this beam converge or meet at a focal point.

**PROPERTIES OF LIGHT**

Light has the following properties:

1. Reflection.
2. Refraction.
3. Diffraction.
4. Dispersion.
5. Interference.
6. Polarization.

**EVALUATION**

1. What is light?
2. What are the types of light beams there is?
3. List the properties of light.

**REFLECTION OF LIGHT**

Reflectionoflightis the change in the direction of light after dashing against a surfray. Reflection involves two rays of light: an incoming **incident** ray and an outgoing **reflected** ray.

**LAW OF REFLECTION**

1. The angle of incident ray, the normal and reflected ray at the point of incidence all lie on the same plane.
2. The angle of incidence (i) and the angle of reflection (r) are equal but on opposite sides of the normal. i = r

N.B: The normal is an imaginary line at right angle to the mirror at the point of incidence.

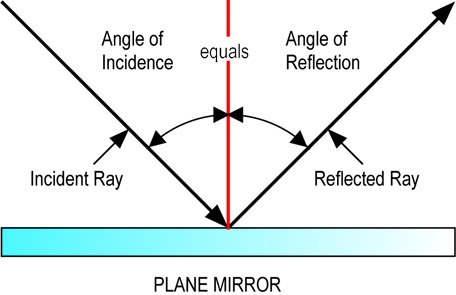
**TYPES OF REFLECTION**

1. Regular or specular reflection: This is when parallel beam of light is reflected in one direction. Such reflection takes place on smooth, polished surface such as a plane mirror.
2. Diffuse reflection: This is when a parallel beam of light is reflected in different directions. Such reflection takes place from a rough surface, such as water surface or paper surface.

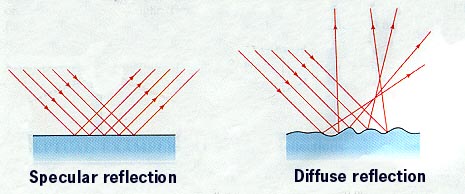
**EVALUATION**

1. What is reflection?
2. State the laws of reflection
3. What the types of reflection?

**REFRACTION**

Refraction is the bending or change in the direction of wave when it moves from one medium to another where its speed is different. A medium is a material or space that allows wave pass through it. Refraction is responsible for image formation by lens and the eye.

When you dip your legs into a pool, it disappears bent in the pool. A fish in an aquarium seem to radically change position as it is being viewed from different view points. These are as a result of refraction.

**LAWS OF REFRACTION**

1. The first law of refraction states that the incident ray, the refracted ray and the normal at the point of incidence all lie on the same plane.
2. The second law states that the sine of the angle of incidence (i) to the sine of the angle of refraction (r) is a constant for a given pair of media.

This is also known as Snell's law and the ratio of "I" to "r" is called the refractive index.

**EVALUATION**

1. What is refraction?
2. State the laws of refraction.

**LENSES AND GLASS PRISMS**

Lenses are curved glasses that disperse or coverge light to a focus.

There are two main types of lenses:

1. Concave lens (diverging lens): This is a lens that bulges outward. A concave lens diverges or scatters light. It is used to correct shortsightedness (myopia)
2. Convex lens (converging lens): This lens bends inward. It converges light to a real focus. It is used to correct longsightedness (hypermetropia).

There are also two types of glass prisms:

(i) Rectangular glass prisms (ii) Triangular glass prisms

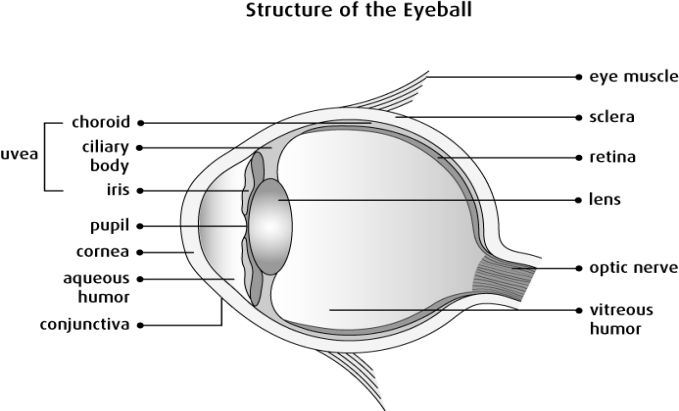


**EVALUATION**

1. What is a lens?
2. Mention the types of lenses.

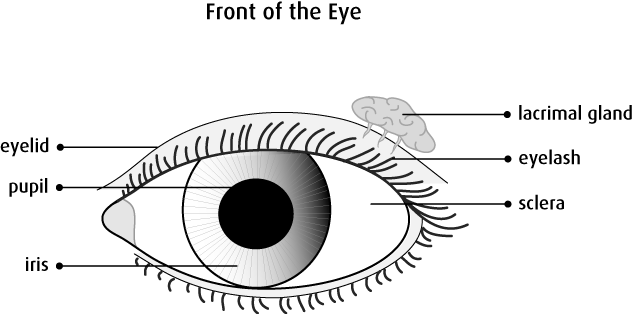
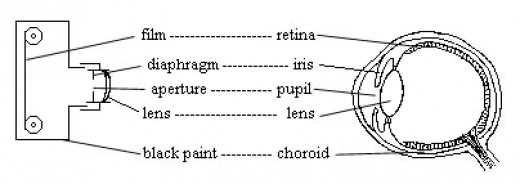


**VISION**

Vision is the ability to create an image. The organ of the body that is concerned with vision is the eye. Light enters through a clear covering of the eye called the **cornea**. It then passes through the adjustable opening in the **iris** called the **pupil.** Beyond the pupil is the lens which is a bit soft and flexible. The lens focus image on the **retina** while like a film or screen at the back of the eye.

The eye and camera are alike in function and arrangement of part. Both are compared for a lot of reasons.

|  |  |  |
| --- | --- | --- |
| Part of the eye | Similar part in camera | Function |
| Cornea |  | A clear covering of the eyes |
| Iris | Diaphragm | This is coloured part of the eye. It control the amount of light entering into the eyes |
| Lens | Lens | The lens converges light at the retina for images to be formed |
| Retina | Film or Screen | The retina is the part of the eyes where images are formed. |
| Pupil | Aperture | This is a small opening in iris that controls the amount of light that enters into the eyes. |

**DISPERSION OF LIGHT**

This is the splitting or separation of light into different colours. Each colour bends by different degrees when refracted. The colours of light that are gotten after separation are called spectrum. Dispersion of light can be done by passing light through a triangular prism.

**RAINBOW**

A natural phenomenon that demonstrates the dispersion of light is the the formation of rainbow. The rainbow is an arc of light with an angular radius of 42° centred on a direction which is opposite to that of the sun in sky (I.e it is centered on the direction of propagation of the sun rays). Thus, if the sun low in the sky (I.e close to the horizon) we see almost a full circle. If the sun is higher up in the sky we see a smaller arc. If the sun is more than the angular radius 42° above the horizon, then there will be no rainbow (for viewers on ear surface).

Observers on a hill may see part of the rainbow below the horizontal i.e an arc greater than a semicircle. Passengers on airplane can sometimes see a full circle. The colours of the rainbow vary smoothly from red on the outside and violet on the inside. There are seven colours of the rainbow; red, orange, yellow, green, blue, indigo and violet.

In the dispersion of light, a ray of enters into a triangular glass prism and it is dispersed into colours seven colours written as **ROYGBIV.**

**EVALUATION**

1. What is vision?
2. What is dispersion of light?
3. Mention five parts of the eye and the function they perform

**GENERAL EVALUATION**

1. What is dispersion of light?
2. List five part of the eye.
3. What is genetic counseling?
4. State three factors that affect sense of individual worth.
5. State four communication technique.

**READING ASSIGNMENT**

Precious Seeds Basic Science for JSS Three by J.O Otugboyega et al. chapter 19 Pages 111-113

**WEEKEND ASSIGNMENT**

1. Which of the following is not a colour of the rainbow A. Red B. Blue C. Brown D. Indigo
2. The property of light in straight line is A. Rectitude propagation B. Rectilinear propagation C. Resisted promulgation D. Responsible promulgation
3. The part of the camera that performs the function of the pupil is A. Aperture B. Lens C. Cornea D. Diaphragm
4. The initial ray of light from the source is called A. Incident ray B. Reflected ray C. Refracted ray D. Emergent ray.
5. An object that absorbs all blue light will appear A. Black B. Blue C. Yellow D. White

**THEORY**

1. What is light?
2. Explain the formation of rainbow
3. Mention the types of lenses
4. What is reflection? Mention the types of reflection
5. Draw a well labelled eye

Week Nine

Sound Energy

Content

Introduction

Sound, a result of matter vibrations, is a fundamental wave phenomenon. It occurs through the vibration of objects, whether solid, liquid, or gaseous, in an elastic medium. Sound waves are produced through mechanical disturbances, like a hammer striking iron or vocal cords vibrating during speech.

Transmission of Sound

Sound propagates through elastic mediums such as air, water, or solids. When a vibrating object comes into contact with an elastic medium, sound is detected. The speed of sound varies based on the medium: it travels fastest in solids, slower in liquids, and even slower in gases. Resonance, demonstrated using a tuning fork, illustrates natural vibration transmission.

Evaluation

1. What defines sound?

2. Explain the process of sound transmission.

Reflection of Sound

Sound waves can reflect off specific curved surfaces, like parabolas or ellipses. Entertainment stages often use parabolic designs to direct sound into the audience, minimizing stage reflections. Echoes occur when sound waves reflect back to their source, while overlapping echoes create reverberation.

Hearing

Hearing involves perceiving sound through vibrations detected by the ear. The ear comprises the outer, middle, and inner parts. The outer ear, including the pinna, auditory canal, and eardrum, amplifies incoming sound waves. The middle ear contains three tiny bones (malleus, incus, stapes) that transmit vibrations to the cochlea in the inner ear. The cochlea, connected to auditory nerve cells, sends signals to the brain.

Evaluation

1. Explain the phenomenon of sound reflection.

2. Describe the parts of the ear and their functions.

General Evaluation

1. Detail the mechanism of hearing.

2. Explain how sound reflection occurs.

3. Define work and describe how energy transfers in a working vehicle.

4. Define power.

5. Answer why churches often have dome-shaped roofs.

6. Explain why lightning is seen before thunder is heard.

Reading Assignment

For further understanding, refer to \*Precious Seeds Basic Science for JSS Three\* by J.O Otugboyega et al., Chapter 20, Pages 114-116.

Weekend Assignment

1. Among the following, what cannot produce sound?

A. Guitar

B. Brain

C. Tuning fork

D. Metals

2. Which part belongs to the outer ear?

A. Stapes

B. Pinna

C. Auditory nerves

D. Hammer

3. What is the term for the reflection of sound back to its source?

A. Echo

B. Reverberation

C. Noise

D. Cacophony

4. What is the speed of sound in a vacuum?

A. 332 m/s

B. 1484 m/s

C. 5120 m/s

D. 0 m/s

5. Distorted frequency sound is called:

A. Noise

B. Echo

C. Music

D. Reverberation

Theory

1. Explain the architectural significance of dome-shaped roofs in churches.

2. Clarify why lightning is seen before thunder is heard.

Week Ten

Magnetism

Content

Introduction

Magnetism is the ability of certain materials, like iron and other ferrometals, to attract metals. A magnet, a substance capable of this attraction, has crucial properties related to its poles and magnetic fields.

Lodestone

Lodestones, rocks made of magnetite (Fe3O4), are naturally magnetic. Early Chinese sailors used them as compasses due to their alignment with the Earth's magnetic field, pointing towards the poles when magnetized.

Laws of Magnetism

When suspended, a bar magnet aligns itself in a North-South direction. Like poles repel (e.g., north-north) while unlike poles attract (e.g., north-south). This principle establishes the laws of magnetism: "Like poles repel each other, and unlike poles attract each other."

Magnetic Pole and Magnetic Field

A magnet near a known magnet can identify its poles. Attraction indicates unlike poles, while repulsion suggests like poles. A magnetic field is the space around a magnet where its force is felt.

Evaluation

1. What is magnetism?

2. State the law of magnetism.

Magnetic Field

A magnetic field surrounds a magnet and is defined by the presence of magnetic poles and the region where magnetic force is experienced.

The Care of Magnets

Proper care ensures magnets maintain their properties:

1. Magnets should be stored with like-magnets to prevent polarity reversal.

2. Replacement covers are essential to prevent wear and tear on magnets.

3. Cleaning should be done gently with a damp sponge, avoiding immersion in water.

4. Magnets should be stored flat on smooth metal surfaces and kept away from heat sources or fires to prevent damage.

General Evaluation

1. What is a magnetic field?

2. Name three ways to care for a magnet.

3. List five effects of flooding.

4. Name three positive uses of the internet.

Reading Assignment

For further understanding, refer to Precious Seeds Basic Science for JSS Three by J.O. Otugboyega et al., Chapter 21, Pages 114-116.

Weekend Assignment

1. Lodestone is a:

A. Magnetic rock

B. Magnetic plate

C. Magnetic field

D. Magnetic ray

2. Which of the following is a method of magnetization?

A. Heating

B. Hammering

C. Induction

D. None of the above

3. Like poles:

A. Attract

B. Repel

C. Join

D. Contact

4. Ways to care for a magnet do NOT include:

A. Keeping with other magnets

B. Keeping clean

C. Leaving in hot water

D. None of the above

5. The chemical formula for magnetite is:

A. Fe2O3

B. FeO

C. Fe3O

D. Fe3O4

Theory

1. Explain what a magnetic field is.

2. List three ways a magnet can be formed.

3. Provide five methods for caring for a magnet.