THIRD TERM E-LEARNING NOTE

SUBJECT: BIOLOGY **CLASS: S. S. ONE**

SCHEME OF WORK

WEEKS	TOPIC
1.	Micro-Organisms Around Us and the Concept of Culturing.
2.	Micro-Organisms in Action.
3.	Sexually Transmitted Infections (STI)
4.	Towards BetterHealth
5.	Relevance of Biology to Agriculture
6.	Pests and Diseases of Plants.
7.	Pests and Diseases of Animals.
8.	Food Storage and Production.

REFERENCES

- Modern Biology for Senior Secondary Schools by S.T. Ramlingam
- Essential Biology by M.C Michael
- New Biology by H. Stone and Cozen
- SSCE, past questions and answers
- New System Biology by Lam and Kwan
- College Biology by IdodoUmeh
- UTME, SSCE and CAMBRIDGE past questions and answers
- Biology practical text

WEEK ONE **DATE: ……**

MICRO-ORGANISMS AROUND US

CONTENT

- Description and Groupsof Microorganisms

- Concept of Culturing
- Identification of Microorganisms
- Carriers of Microorganisms

DESCRIPTION AND GROUS OF MICROORGANISMS

Micro-organisms otherwise called microbes or germs can be defined as living things which cannot be seen with unaided eye but by the use of microscopes.

They exist almost everywhere, in water, air, soil, surface of objects, as well as on and within living organisms. They are carried by air currents from the earth's surface to the upper atmosphere. They occur most abundantly where there is food, moisture and adequate temperature for their growth.

It was the invention of microscope that opened the gateway to the world of these minute living organisms. The first person to discover microbes was a Dutch man called Anthony Leeuwenhoek (1632-1723). Using a simple microscope, he was astonished to discover that rain water that had been collected from pools was full of little organisms.

GROUPS OF MICRO-ORGANISMS

Micro-organisms include all viruses, bacteria and the protists. Others are the cyanobacteria, certain fungi and algae.

1. **BACTERIA:** These are minute unicellular organisms or simple association of similar cells which multiply by binary fission. Most bacteria cells range between 0.2 µ-2µ in diameter and 0.0005mm-0.002mm long. Each bacterium cell has a cell wall with cytoplasm. There is no well defined nucleus. Consequently, they are **prokaryotic organisms**.
   There are different kinds of bacteria showing a range of shapes. Certain kinds of bacteria have long thread-like structures called **flagella** which assist in locomotion. Bacteria with spherical shape are referred to as **cocci** (singular-coccus). There are several forms as shown on the next page.

   Streplococci- These are arranged in chains. They cause sore throat.

   Staphylococci- These stick together to form irregular bunches. They cause boils.

   Diplococci- They occurs in pairs. e.g. pneumococci which causes pneumonia.

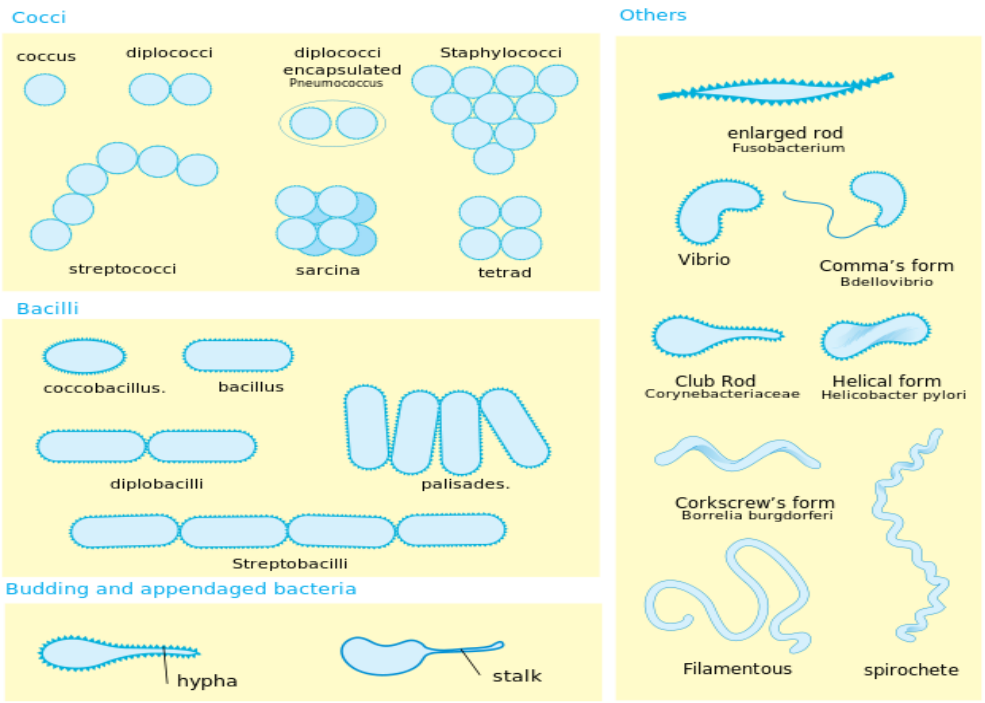
   Bacilli- They is rod-shaped. They cause typhoid fever.

   Spirilla (singular = spirillum)- These are rod-shaped bacteria twisted into a spiral shape.

   Spirochaetes- These **are also s**piral in shape but are more flexible and slender with helically coiled structure e.g*Treponemapallidum* which causes syphilis.

   Vibrios- These are comma-shaped bacteria e.g*Vibriocholera* which causes cholera.

2. **VIRUSES:** Viruses are a large group of pathogens whose presence is felt only when they are in contact with living cells. They are very small and vary between 0.1µ-0.25 µ in diameter. The largest virus is less than one-fourth the size of typhoid bacterium.
   A virus consists of a nuclear material either DNA or RNA, enclosed within a protein coat. Outside living organisms they are like complex chemicals.
3. **PROTISTS:** These are single-celled animals, mostofwhich are only visible by means of microscope. They are common in fresh water and moist soils. Examples include *Euglena, Parameciu*m, *Trypanosoma, Plasmodium,* etc.
4. **FUNGI:** They are diversified in form. The blue and green growth on oranges, lemons, cheese and the white/grey growth on bread are usually signs of fungal infections. Fungi feed saprophytically. Examples of fungi include *Mucor, Rhizopus, Penicillium, Aspergillus*, etc.
5. **ALGAE**: Most algae are unicellular and very small. They have chlorophyll. They occur abundantly in water, moist soils, bark of trees, stones, etc. Free floating microscopic algae are referred to as **phytoplanktons**and they form the major food of aquatic animals. Examples of unicellular algae include *Chlamydomonas and Protococcus.*



Shapes of bacteria

EVALUATION

1. What are microorganisms
2. List five groups of microorganisms with two examples each

CONCEPT OF CULTURING

A pre-requisite to studying microbes is their cultivation under laboratory conditions. Hence, it is important to know the nutrients and physical conditions needed by the organisms.

It is easier to grow bacteria, fungi, and algae in appropriate media. The material on or in which microbes grow in the laboratory is called **culture medium**. Some media are prepared from complex extracts of plant or animal tissues. A culture is the population of organisms cultivated in a medium.

If a culture contains only one living species of organism regardless of the…