MICROBIOLOGY - INTRODUCTION

Introduction

- It is the study of living organisms that can be seen only under microscope.
- The various microorganisms belong to Algae, Fungi, Bacteria, Protozoans, Viruses etc. Though mushrooms are fairly large they are studied in microbiology.
- **Roger Stanier** suggested that microbiology is defined not only on the basis of size of organisms but also the methods used for their culture.
- For successful isolation and culture of microorganisms, the technique of sterilisation and usage of culture media are employed.
- Microbes grow everywhere. They can grow in extreme conditions such as hot water springs, icy mountains and arctic regions.
- They grow in extreme alkaline conditions (**Alkalophilic**), acidic conditions (**Acidophilic**), high temperature (**Thermophilic**) and salt concentrations (**Halophilic**).

Importance of Microbiology

- There is no field of human endeavour, where the microorganisms do not play an important role. They affect the human society in several ways. Some of the prominent ones are listed below :
    I. Microorganisms decompose dead plants and animals and enrich the soil with nutrients which can be used by plants.
    II. Microbes cause diseases in plants and human beings. On the other hand they help in creating a disease free world by producing antibiotics and vaccinations.
    III. Microbes play an important role in recycling of elements such as oxygen, carbon, nitrogen, sulphur and phosphorus.
    IV. Many industrial products like enzymes, amino acids, vitamins, organic acids and alcohols are commercially produced by microorganisms.
    V. Some of our food stuffs like cheese, yoghurt are actually the by-products of microbial growth.
    VI. Microbes like bacteria and fungi are used in sewage disposal.
    VII. Microbes are now used in extracting valuable metals like uranium from rocks. Use of microbes in mining reduces the cost by more than 50%.
    VIII. The most important development in microbiology is the ability to alter genetic makeup of organisms commonly referred to as genetic engineering.
    IX. Oflate, microbes are also used for the exploration of life in the outer space, which is termed as exomicrobiology.
    X. Biogas is a mixture of gases (containing predominantly methane) produced by microbial activity and which may be used as fuel.
    XI. Microbes are used as biocontrol agents eg:B. Thurengenesis (bt)