INTRODUCTION OF BIOTECHNOLOGY:

Biotechnology is defined as the use of living organism in processes for the manufacture of useful products or for services. Although the term biotechnology is new, the discipline itself is very old. Fermentation and other such processes, which are based on the natural capabilities of organism, are commonly considered as old biotechnology.

Humans being using microorganism as early as 4000BC for making wine, vinegar, cheese, yogurt, etc. some of these processes have become a part of every home that we may even hesitate to refer them as biotechnology.

Genetic Engineering: i.e. the artificial synthesis, modification, removal, addition and repair of the genetic material (DNA) are considered as modern biotechnology. It is done to alter the characteristics of organism. The work on genetic engineering started in 1944 when it was proved that DNA carries the

genetic information. Scientist isolated the enzymes of DNA synthesis and then prepared DNA outside cells. In 1970s, they were able to cut and paste the DNA of organism. In 1978, scientist prepared human insulin by inserting the insulin gene in bacteria. Human growth hormone was also synthesized in bacteria. In 1990, the Human Genome project was launched to map all the genes in human cell. The complete map of human genome was published in 2002.

In Scotland in 1997 an embryologist Ian Wilmot produced a sheep (dolly) from the body cell of an adult sheep.

Scope and importance of Biotechnology:

In recent years, biotechnology is growing as a separate science. It has attracted the attention of many intellectuals from diverse fields like agriculture, medicine, microbiology

barely, wheat flour and whole milk), various vitamins and dairy products are produced by using microorganism. Wine and beer are produced in beverage industry. Biotechnology has also revolutionized research activities in the area of agriculture.

Transgenic (organism with modified genetic set-up) plants are being developed; in which desirable characteristics are present e.g. more yields and resistance against diseases, insects and herbicides. Transgenic goats, chickens, cow give more food and milk etc. many animals like mice, cow, goats etc. have been made transgenic to get medicines through their milk, blood or urine.

Biotechnology and Environment:

Biotechnology is also being used for dealing with environmental issues, like pollution control development of renewable sources for energy, restoration of degraded lands and biodiversity conservation. Bacterial enzymes

type of organism into another. As a result the characteristics of the host organism could be changed. If host organism is a microorganism such as bacterium the transferred DNA is multiplied many times as the microorganism multiplies. Consequently, it is possible to obtain millions of copies of a specific DNA inside a bacterial cell.

Objective of Genetic Engineering:

The important objectives of genetic engineering are as follows.

- Isolation of a particular gene or part of a gene for various purposes such as gene therapy.
- Production of particular RNA and protein molecules.
- Improvement in the production of enzymes drugs and commercially important organic chemicals.
- Production of varieties of plants having particular desirable characteristics