

SRI BHARATHI ARTS AND SCIENCE COLLEGE FOR WOMEN
(Affiliated to Bharathidasan University)

KAIKKURCHI- PUDUKKOTTAI-622303

DEPARTMENT OF BIOTECHNOLOGY
CLASS – III B.Sc., BIOTECHNOLOGY
SUBJECT - MICROBIAL BIOTECHNOLOGY

Sub.Code:16SCCBT8

Answer All Questions

1. Growth Kinetics:

Growth kinetics is an autocatalytic reaction which implies that the rate of growth is directly proportional to the concentration of the cell.

2. Isolation:

Isolation is one of the aspects which make bio-separations unlike commodity chemical separations. Isolation involves taking a highly dilute aqueous feed and removing most of water. The resulting concentrate can be purified by a variety of methods

3. Growth Phases

(i). Lag phase (ii). Log phase(Exponential) (iii). Stationary phase (iv).death

4. Strain improvement

The science and technology of manipulating and improving microbial strains, in order to enhance their metabolic capacities for biotechnological applications are referred to as strain improvement

5. List any four industrially important microbes

- i. *Bifidobacterium lactis*
- ii. *Aspergillus niger*
- iii. *Lactobacillus casei*
- iv. *Sacchromyces cerevisiae*

6. Bioreactors

Bioreactors is an apparatus, a fermentation vat for the production of living organisms, as bacteria, yeast used in industrial processs such as waste recycling or in the manufacture of drugs or other products.

7. Fermentation

The fermentation is the process in which a substance breaks down into a simpler substance. Microorganisms like yeast, bacteria usually play a role in the fermentation process.

8. Sterilization

Sterilization is essential for preventing the contamination with any undesired microorganisms.

9. Biotransformation

Biotransformation is a process by which organic compounds are transformed from one form to another, aided by organisms such as bacteria, fungi, and enzymes.

10. Plant cell cultivation methods

- i. Micro propagation through the enhanced multiplication of axillary bud
- ii. Organogenesis
- iii. Somatic embryogenesis

11. Media

Substance containing nutrients to support microbial growth. This may be a solid, liquid, or semisolid.

12. Agitation

Agitation ensures that a uniform suspension of microbial cells is achieved in a homogeneous nutrient medium. Aeration and agitation depend on fermentation.

13. Upstream processing

The upstream process is defined as the entire process from early cell isolation and cultivation, to cell banking and culture expansion of the cells until final harvest.

14. Scale up process

The art of designing of large scale apparatus or full size plant (prototype) using the data obtained from the laboratory studies.

15. Bioprocess parameters

- i. **Physical**- Temperature, Pressure, Flow rates, Viscosity, Power consumption and turbidity
- ii. **Chemical**-pH, Substrate concentration, O₂ concentration, Waste gases (CO₂) concentration, Product concentration, Ionic strength
- iii. **Biological**- Activity of specific enzyme, Protein concentration

16. Downstream process

Product recovery and purification is called as downstream processing.

17. Cell disruption

Cell disruption is the method or process for disrupting or lysing the cell in order to release the contents out of the cell. Bio-separations usually begin with the separation of biomass from the broth and the trapped material is released by rupturing the cell wall which is also called as cell disruption.

18. Crystallization

Crystallization, the formation of solid particles of defined shape and size from a homogeneous liquid phase, is the oldest and most common purification.

19. Filtration and its types

This is a technique used for separating biomass, It depends on size, viscosity, medium, temperature etc.

Types: i). Depth filter, ii). Absolute filter, iii). Rotary vacuum filter, iv). Membrane filter

20. Reverse osmosis

This is the process by which the molecules of a solvent pass through the semi-permeable from a region of higher concentration to lower concentration when pressure greater than the osmotic pressure is applied.

21. Food additives:

It is a substance added to food to preserve flavor or enhance its taste, appearance.

22. Food flavours

Flavour is the sensory impression of a food or other substance and it is determined mainly by the chemical sense of taste and smell.

23. Pickling:

Pickling is the process of preserving or extending the shelf life of food by either anaerobic fermentation in brine or immersion in vinegar

24. Bacteriocin

It is a form of proteinaceous or peptidic toxins that is produced by bacteria. It inhibits or kills the growth of other kinds of bacteria.

25. Food preservation:

It refers to any one of a number of techniques used to prevent food from spoiling. It includes canning, freezing, pasteurization.