UG 6th Semester

DSE- III (Industrial & Environmental Microbiology)

Unit- I

Long Question

1. Describe the components of a typical bioreactor.

2. Discuss the mode of operation and designing of a bioreactor.

3. Discuss different types of bioreactors.

4. Discuss batch and continuous fermentation processes. Give their advantages and disadvantages.

Short Notes

1. Turbidostat

2. batch fermentation

3. Chemostat

4. continuous fermentation

5. solid state fermentation

6. liquid state fermentation

7. Stationary fermentation

8. Submerged fermentation

9. CSTR

10. Tower fermenter

11. Fixed bed & Fluidized bed bioreactor

12. Air lift fermenter

Unit- II

Long Question

1. Write an essay on constituents of fermentation media

2. briefly describe various methods of enzyme immobilization. Give its applications.

3. Describe the fermentation conditions and set up used to achieve them.

4. Give an outline of the downstream processing operations

5. Discuss various industrial scale centrifuges.

6. Describe different techniques used for cell disruption for product recovery.

7. Describe the industrial process for production of amylase. Add a note on its applications

8. Describe the industrial process for production of Citric acid. Add a note on its applications

9. Describe the industrial process for production of Glutamic acid. Add a note on its applications

10. Describe the industrial process for production of ethanol. Add a note on its applications

11. Describe the industrial process for production of penicillin. Add a note on production of synthetic penicillin.

Short Notes

1. Desired characteristics of industrial microbes

2. carbon substrates as energy source

3. Rotary vacuum filter

4. lyophilisation

5. microbial culture collections

6. Screening of Microbes for amylase

7. Screening of Microbes for casein hydrolysis

8. Screening of Microbes for cellulose hydrolysis

9. large scale application of immobilized enzymes

10. large scale application of immobilized glucose isomerise

11. large scale application of immobilized penicillin acylase

12. advantages of enzyme immobilization

13. quantitative estimation of amylase

14. quantitative estimation of lipase

15. Spray drying

16. Ultrafiltration

17. solvent extraction

18. fermentation conditions

19. microorganisms involved in industrial production

20. cell disruption methods

21. Multi chamber bowl centrifuge

22. disk stack centrifuge

Unit- III

Long Question

1. Discuss the process of isolation of microorganisms from soil.

2. Describe the distribution of microbes in air & the mechanisms for its isolation.

3. Discuss the process of isolation of microorganisms from water.

Short Notes

1. Microbes in soil

2. Serial dilution technique

3. Distribution of microbes in air

Unit- IV

Long Question

1. Write an essay on water pollution

2. What are the causes of water pollution. Explain the water treatment systems

3. Narrate the role of microbes in domestic and sewage waste water treatment systems

Short Notes

1. Eutrophication

2. SOD

3. COD

4. TDS

5. TOC

6. Microbes as indicator of water quality

7. Sources of water pollution

8. checking of fecal coliform in water samples

Unit- V

Long Question

1.Explain types of bioremediation strategies.

2. Write an essay on process of biological nitrogen fixation.

3. Define mycorrhizae. Describe briefly its different types. Give it's significances.

4.Write an essay on bioremediation. Give it's advantages and disadvantages.

5. Give an account of biological nitrogen fixation.

6. Describe, in brief, about the role of microbes in agriculture.

Short Notes

1. VAM

2. Isolation of root nodulating bacteria

3. Mycorrhizae

4. Endomycorrhiza.

5. Ectomycorrhiza.

6. In Situ bioremediation

7. ex situ bioremediation

8. Microbes involved in bioremediation process