

INDUSTRIAL MICROBIOLOGY

Full Marks: 100

1. Industrial importance of microbiology.
6
2. General technique of selection, treatment, strain development, preservation of industrially important microorganisms.
10
3. Screening of industrially important microorganisms
6
4. The production of industrial alcohol by fermentation and process & technology of ethyl alcohol fermentation.
4
5. Process & technology of brewing.
8
6. Process & technology of wine preparation
10
7. The distillation industries
4
8. Vitamin production by yeast and yeast like micro organisms, viz riboflavin
4
9. Yeast Enzyme and mirror products : invertase, lactase
6
10. Fermented food products: Miso, tempeh, soya sauce, natto, sauerkraut
10
11. Microbial production of aminoacids: a) Tryptophan b) Lysine c) Glutamic acid
6
12. Microbial production of therapeutic compounds. a) Penicillins b) Tetracyclines c) Streptomycine
8
13. Microbial synthesis of fats, protein & polysaccharides
8
14. Microbiological assay of nutrients
6
15. Microbial flavors & fragrances a) Diacetyl b) lactones c) butyric acid
4

16. Production of single cell proteins
2
17. Microbial production of organic acids: a) Citric acid b) Gluconic acid
4
18. General study of biofertilizers

PRACTICALS:

1. Antibiotic assay
2. Penicillin fermentation
3. Amylase growth precipitation, estimation and application .
4. Citric acid fermentation, analysis and recovery
5. Fermented beverages, preparation of wines & and their quality rates.
6. Study of the traditional fermented food preparation & production of wines, alcohol and suggestion for process modification.
7. Preparation and quality as well as quantity production of ethyl alcohol in the laboratory.
8. Determination of productivity efficiency and yield of ethanol in batch fermentation.
9. Hydrometric and pycnometric determination of alcohol in alcoholic beverages.
10. Screening of fermentative molds and saccharifying molds from murcha cake and murcha plants.
11. Lab preparation of murcha cake.
12. Solid rate fermentation for analysis production.
13. Production of immobilized yeast cells .
14. Lab design of continous culture for ethanol production .
15. Mold fermentation for enzyme production.
16. Continous culture for alcohol production.
17. Screening of fermentative yeasts from murcha cake and murcha plants.

TEXT BOOKS:

1. Moo Young M. Comprehensive Biotechnology, Vol 3 , Pergamon press, 1985
2. Prescott and Dunn. Industrial Microbiology, 4th edition CBS publishers and distributions, Delhi
3. Peppler , J.H, Microbial technology , Reinhold publishing corporation. 1977
4. Singha, B.D Biotechnology, Kalyani Publishers, India 1998

REFERENCE BOOKS:

1. Smith , J.E, Biotechnolgy, 3rd Edition Cambridge University press, 1986
2. Patel, A.H Industrial microbiology, Macmillan India Limited, 1986
3. Dubey. R.C A textbook of Biotechnology, 3rd edn S.Chand and company, India 2000
4. Dasva ,E.J Microbial Technolgy in the developing world oxford university Press NY. 1987
5. Aneja KR .Experiments in microbiology , plant pathology and tissue culture, 2nd Edn, wishwa prakashan India, 1996
6. Chan ECS, Pelezar MJ Jr. Kreia NR , Laboratory exercise in microbiooogy , 6th edn Mc Graw Hill Inc. 1993