

GE4: Industrial and Food Microbiology

Sem4

THEORY HMBGE4042T

Total Hours: 52

Module 1

Credit 4

Full Marks: 30

Food microbiology-

[30]

Microbial flora of fresh foods: Milk as a growth medium of bacteria, normal micro flora of milk, undesirable microorganisms in milk and normal micro flora of meat, poultry, eggs, fruits and vegetables.

Microbial spoilage of food- Fresh food, fresh milk, canned food and stored grains. Microbiological examination of food: microscopic examination and culture, phosphatase test of Pasteurized milk.

Preservation of food- High temperature (boiling, pasteurization, appertization), low temperature (freezing), dehydration, osmotic pressure, chemical preservations, radiation.

Microbiologically fermented food- Curd, cheese, idli, yogurt, acidophilic milk, microorganisms as food SCP- food borne diseases.

Module 2

Full Marks: 20

2) Industrial microbiology- Fermentation processes- batch and continuous, plug flow method, products of industrial fermentation: Outline of the production for ethanol, vinegar, citric acid, amylase, vitamin B, antibiotics (penicillin and streptomycin), brewing and wine making (flow sheet of the process). [22]

Reference: 1.Food Microbiology Frazier and Westhoff

2.Industrial Microbiology Prescott and Dunn.

3.Text Book of Biotechnology R.C.Dubey.

4.Applied Biotechnology Fr. Ignachimuthu.

PRACTICAL

HMBGE4042P

Credit 2

Total Hours:26

- 1) Methylene blue reduction tests of milk Samples.
- 2) Simple biochemical tests of bacteria- Acid and gas production in glucose broth, production of indole by *E. coli*, starch hydrolysis by *Bacillus* sp., urea hydrolysis:

catalase and oxidase test (use of appropriate negative controls).

- 3) Antibiotic sensitivity tests by cup plate/paper disc method (antibiotics- amoxicillin, streptomycin, tetracycline, norfloxacin (any two) and test organisms (*Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* or any other non pathogenic strains).
- 4) Bacteriological examination of curd

Reference: 1. Practical Biochemistry Wilson and Walker

