Subject Code : P8BOE1

Elective Course – I : INDUSTRIAL MICROBIOLOGY

Unit-I

General Introduction, history and development of industrial microbiology, scope of industrial microbiology. Microorganisms in industry - Sterilization - Preparation of media - Isolation methods for microorganisms - Culture and preservation and stability. Principles of storage of microbes at low temperature in liquid nitrogen, preparation of inoculum.

Unit-II

Principal types of fermentation: Factors involved in fermenter design, differences between biochemical and chemical processes; biochemical reactions, operational consideration. Fermenter configuration and various types of fermentors; principle of operation characteristics of fermentors.

Unit-III

Methylotrophs: Methanogens and methylotrophs, Mechanism of methane production - Economic importance of methylotrophs. Hydrogen fuel. Microbial leaching. Sulphur utilizing bacteria, sulphate reduction pathway - Use of nucleotides as nitrogen source for growth of certain microorganisms (pathway of nucleic acid breakdown).

Unit-IV

Microbial production of food; Microbial Single Cell Protein (SCP). Fermented dairy products, fermented meats, leavening of breads, alcoholic beverages - beer, distilled liquors and wines, vinegar; fermented vegetables, pickles, olives and soy sauce.

Unit-V

Production of pharmaceuticals: Antibiotics, Steroids, Human Proteins, Vaccines and Vitamins, Enzymes.

Antibiotics and their mode of action with reference to Penicillin, Streptomycin, Erythromycin, Cephalosporin and Griseofulvin.

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***Note*:** No Practical for this paper.