



B.Sc. PLANT BIOLOGY & PLANT BIOTECHNOLOGY

Paper 17a APPLIED MICROBIOLOGY

B.Sc va (Candidates admitted from the academic year 2008 -2009)

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Core Theory

UNIT I

Introduction to microbiology: Evolution of microorganisms, Classification of microorganisms: Whittaker's five kingdom concept and Carl Woese's three domain concept. Acellular microorganism: Prions, Viroids, and Viruses- Isometric, Helical and Binal viruses. Cellular microorganism: Bacteria- Eubacteria and Archaeobacteria.

Key words: Interfaces, Microspheres, Progenotes, Autogenous model, Endosymbiont, Monera, Protista, CJD, Kuru, PrP^{sc}, Virions, Capsid, Capsomers, Lipoviruses.

UNIT II

Industrial production of pharmaceuticals, organic acids, and solvents. Commercial use of microbial enzymes in industries.

Key words: Penicillin, Streptomycin, Regulatory mutants, MSG, Proteases, Amylases.

UNIT III

Food microbiology

Microbiology of food: Food additives, food-borne illness and food preservation methods.

Key words: Infectious illness, Intoxication illness, Salmonellosis, Amoebiasis, Diarrhea, Cholera, Mycotoxins, Aflatoxins, Pasteurization, Canning.

UNIT-IV

Agriculture microbiology

Role of microbes in soil fertility, Biofertilizers: preparation, application and their significance. Biopesticides.

Key words: Nitrification, Denitrification, Ammonification, BGA, *Bacillus thuringiensis*

UNIT-V

Medical microbiology

Beneficial interaction between microbes and humans. Normal human microbiota.

Diseases caused by pathogens that enter through skin, respiratory tract, gastrointestinal tract and genito-urinary tract.

Key words: Commensalism, Cathelicidins, Sebum, Comedo, Doderlein's bacillus.

UNIT-VI

Diagnosis, treatment and prevention of human diseases such as AIDS, Tuberculosis, Tineas and Amoebiosis.

Key words: Reverse transcriptase, Integrase, ARC, ELISA, AZT, NRTIs, Caseous lesion, Ghon complexes, Tuberculous cavities, Miliary tuberculosis, Reactivation tuberculosis, Mycoses, Cysterin proteinase, Iodoquinol.

Suggested Reading

ANATHANARAYAN, R AND C.K.J. PANIKER. 2000. Text book of Microbiology, 6th Edition. Orient Longman.

ATLAS, R.M. 1989. Microbiology - Fundamentals and Applications. McMillan Publishing Company. New York.

JOGLAND, S.N. 2000. Medical Biotechnology. Himalaya Publishing House, Mumbai.

MADIGAN, M.T. AND J.N. MARTINKO. 2006, Brock Biology of Microorganisms. 11th edition. Pearson Education, Inc. Upper Saddle River, USA

MCKANE, L. AND J. KANDEL. 1996. Microbiology - Essentials and Applications. McGraw Hill Inc., New York.

PATEL, A.H. 1985. Industrial Microbiology. Rajiv for Macmillan India Ltd. New Delhi.

PELCZAR Jr. M.J., E.C.S. CHAN AND N.R. KRIEG. 1986. Microbiology. 5th Edition. McGraw Hill Book Company. New York.

PRESCOT, L.M., J.P. HARLEY AND B.A. KLEIN. 2005. Microbiology. 6th Edition. Mc Graw Hill Book Company, New York.

WAITES, M. J., N.L. MORGON, J.S. ROCKERY AND G. HIGTON. 2001. Industrial Microbiology - An Introduction. Blackwell Science.

WEIR, D.M. 1992. Immunological Techniques, 3 volumes. Blackwell Scientific Publications, London.

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