



B.Sc. PLANT BIOLOGY & PLANT BIOTECHNOLOGY

**Paper 13a ECOLOGY, CONSERVATION
BIOLOGY AND REMOTE SENSING**

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

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Core Theory

UNIT 1

Ecosystem concept. Structure and function. Autotrophs and heterotrophs. Herbivores, and Decomposers. Energy and nutrients. Food chain and Food webs. Energy flow through ecosystems. Nitrogen and Carbon cycles.

UNIT II

Ecosystems as working units of the biosphere. Global habitats and their ecosystem Features. Habitat specialists and habitat generalists. Tropical moist forests, Grasslands, Mangroves and Deep sea communities.

UNIT III

Plant – herbivore and Prey – predator relations. Co – evolution. Keystone species and mutualisms.

Forests and seasonal rhythms. Phenology. Plant reproductive cycles. Flowering and Fruiting episodes. Pollination and dispersal. Pollinator guilds. Seeding patterns in plants.

UNIT IV

Forests and their importance. Forest types of India with special reference to Tamil Nadu.

Plant genetic resources of India and their conservation. Bioprospecting and biopiracy.

UNIT V

Remote Sensing and Tropical Forests: Platforms for data acquisition – LANDSAT, INSAT, IRS; Sensors and their application – Visible, infrared & microwave (MSS, AVHRR, LISS, WiFS. Spectral signatures and Spectral Reflection Curves of vegetation, Soil and Water. Role of remote sensing in forest / biodiversity conservation. False Colour Composites (FCC)

UNIT VI

Major and minor forest products. Timber, food, drug, fibre, oil, fodder and fuelwood. Afforestation and agroforestry. Silviculture of teak.

Biological conservation. *In situ* and *ex situ* conservations. World heritage sites, Biosphere reserves, National Parks, National Sanctuaries and Sacred

Groves. Conservation of biodiversity with special reference to India. Brief account of the following: UNEP, IUCN, WWF, CBD, BGCI, NBF.

Suggested Reading

- ANONYMOUS. 1972. Indian Forest Utilization. Vol. I & II. Forest Research Institute, Dehra Dun, India.
- BEDELL, Y. E., Seed science and Technology. Indian Forestry species. Allied Publishers limited, New Delhi.
- BILLINGS, W.D. 1970. Plants, Man and Ecosystem. Second Edition. Fundamentals of Botany Series. Wadsworth Publishing Company. Belmont. California.
- BRADSHAW, M.J. 1979. Earth - The Living Planet. ELBS. Hodder and Stoughton Educational. Great Britain.
- DESH BANDHU AND EKLAVYA, 1977. Current trends in Indian Environment. Today and Tomorrow's Publications. New Delhi.
- EWUSIE, YANNEY. 1986. Elements of Tropical Ecology. ELBS. Heinemann Educational Books Ltd. London.
- JAIN, S.K. AND K.L. MEHRA. 1983. Conservation of Tropical Plants Resources. Botanical Survey of India. Howrah. India.
- JANZEN, D.H. 1975. Ecology of plants in the tropics. Arnold. London.
- JOSPEH, L., AND K. MILLER. 1992. Biology: Core Concepts. D.C. Heath & Company, Toronto.
- KAUFMAN, P.B.(Ed.). 1989. Plants: Their Biology and Importance. Harper and Row Publishers. New York.
- KAUFMAN, DONALD E. AND CECILIA M. FRANZ. 1993. Biosphere 2000: Protecting Our Global Environment. Harper Collins College Publishers. New York.
- KNIGHT, C.B. 1965. Basic Concepts of Ecology. The Macmillan Company. New York.
- KORMONDY, E. 1989. Concepts of Ecology. Third Edition. Prentice Hall of India. New Delhi.

- KUTTY, R., AND KOTHARI, A. 2001. Protected areas in India – A profile. Kalpavriksh-MoEF. New Delhi, India.
- LEVINE JOSEPH.S. AND KENNETH.R.MILLAN. 1992. Biology. Vol. I. Core concepts. D.C. Heath and Company, Lexington. USA.
- MICHAEL, S. 1996. Ecology. Oxford University Press, Oxford, London.
- ODUM, E.P. 1978. Fundamentals of Ecology, Third Edition. Saunder's International Students Edition. Philadelphia.
- PUROHIT, V.B. AND B.V. MOGHE. 1988. Recent advances in Ecology and Environment. Today and Tomorrow's Publishers. New Delhi.
- SAGREIYA. K.P. 1979. Forests and forestry. National Book Trust. New Delhi.
- SHARMA, P.D. 1989. Elements of Ecology Rastogi Publications, Meerut. India.
- SHARMA, P. D. 1999. Ecology and environment. Rastogi Publications. Meerut, India.
- SRIVASTAVA, P.B. An introduction to forestry.
- YANNEY, E. 1985. Elements of Ecology. ELBS Publication. Heinemann Educational Books.