Subject Code : MBEBI3

MAJOR BASED ELECTIVE III: BIODIVERSITY

UNIT-I

Biodiversity-Definition-Types-Diversity of Genes (genetic diversity) species (species diversity) and ecosystems (ecosystem diversity). Genetic diversity-Nature and origin of genetic variation- The need for preservation of wild relatives of domestic animals. Centres of origin of domesticated animals. Species diversity- Measurement, concepts, richness and turnover. Species - area relationships - Global distribution of richness - Centres of species diversity- Mega diversity centres- Hot spot analysis.

UNIT-II

Loss of biodiversity- Species extinction- Fundamental causes- Deterministic and stochastic processes- Current and future extinction rates-Methods of estimating loss of biodiversity- Threatened species- The IUCN threat categories (Extinct, Endangered, Vulnerable, Rare, Intermediate, and Insufficiently known). The threat factors (Habitat loss, Over exploitation for uses, introduction of exotics, Diseases, Habitat fragmentation etc.,) Common threat animal taxa of India- Red data books.

UNIT- III

Uses and values of Biodiversity- Uses of bio resources- animal uses; food animals (terrestrial and aquatic), non-food uses of animals, domestic livestock. Values of Biodiversity- Instrumental (Goods, Services, Information and Psycho spiritual values) and inherent or intrinsic values, ethical and aesthetic values- An outline account on methods of valuing biodiversity.

UNIT -IV

Conservation and sustainable management of Biodiversity and Bioresources- National policies and instrument relating the production of the wild / domesticated fauna as well as habitats- International policies and Instruments- A general account on multilateral treaties – the role of CBD, IUCN, IBPGR, NBPGR, WWF, FAO, UNESCO, AND CITES- bioresources. Biotechnology and intellectual Property Rights: An elementary account on WTO, GATT, and TRIPs, Bio prospecting and IKS, Bio-pyracy rights of farmers, breeders, and indigenous people- An elementary account on biodiversity/ bio resources data.

UNIT -V

Conservation of biodiversity- Why conservation biology? Current practices in conservation- Habitat or ecosystem approaches- Species based approaches-Social approaches- Chipko movement- *In situ* (Afforestration, Social forestry,

Agro forestry, Zoos, Biosphere reserves, National parks, Sanctuaries), and *ex situ* (Cryopreservation, Gene banks, Sperm banks, DNA banks, Tissue culture and Biotechnological strategies). Eco restoration, environmental and biodiversity laws, environmental education.

REFERENCES:

1. Primack, R. B. 1993. Essentials of Conservation Biology, Sinauer Associates, USA
2. Meffe,. G. K. and C. R. Carroll. 1994. Principles of Conservation Biology, Sinauer Associates, USA
3. Groom bridge, B. 1992. Global Biodiversity. Status of the Earth's Living Resources. Chapman and Hall, London.
4. Mittermeier, R. A., N. Meyers, P.R. Gil and C. G. Mittermeier 2000. Hotspots: Earth's Biologically richest and most endangered Terrestrial Ecoregions. Cemex/ Conservation International, USA
5. Mittermeier, R. A., P.R. Gil and C. G. Mittermeier 1997. Megadiversity: Earth's Biologicals Wealthiest Nations, Cemex, SA
6. Soule, M.E. 1986. Conservation Biology: The Science of Scarcity and Diversity, Sinauer Associates Inc., USA.
7. Reaka - Kudla, . M. L., D. E. Wilson and E. O. Wilson 1997. Biodiversity II: Understanding and Protecting our Biological Resources. Joseph Henry Press, Washington, DC.
8. Clark, T. W., R. P. Reading and A.L.Clarke 1994. Endangered Species Recovery:Finding the Lessons, Improving the process. Island Press, Washington, DC.
9. Anon. 1992. Convention on Biological Diversity - Text and annexes. World Wide Fund for Nature - India.
10. http://www.redlist.org
11. Reid, W. V and K.R. Miller 1989. Keeping options Alive. World Resources Institute.
12. Anon. 1997. Wildlife (Protection) Act of India, Nataraj Publishers, Dehradun
13. Gaston, K. J. 1996. Biodiversity: Biology of numbers and Difference. Blackwell