

FUNDAMENTALS OF BIOLOGICAL SYSTEMS

Unit – I :

Universal cell concepts : Cell as unit of life – Structure of prokaryotic and eukaryotic cells – Differences and Similarities in plant and animal cells. Cell transport across Plasma membrane – Mechanism of transport in vascular plants and animals. Cell reproduction, Cell Cycle, Mitosis and Meiosis.

Unit – II :

Plant taxonomy concepts : Introduction Classification (Bentham & Hooker's) – Cytotaxonomy- Chaemotaxonomy - Numerical Taxonomy - Nomenclature.

Unit – III :

Plant physiology : Cell energetics and respiration - Energy capture- Photosynthesis - Role of ATP in energy cycle - Utilization of glucose and glycolysis- Mitochondrial respiration –Phosphorylation.

Unit – IV :

Fundamentals of Genetics - Principles of reproduction - Human reproduction - Animal development.

Unit – V :

Evolutionary concepts : Theories on evolution (origin of life)-Prokaryotes and virus-Fungi- Mold- Lichens - Plant diversity- Animal diversity, Origin of species and Macro evolution, Variation, Speciation, Molecular evolution, Duplication, Haemoglobin, Cytochrome C – Mimicry and Colouration – Adaptive radiation.

Unit – VI :

Ecological concepts :Basic ecological principles - Population and Community ecology-Principles of animal behaviour- Social behaviour – Food chain- Food web in ecosystem – Human impact on world ecosystem.

Reference Books

1. De Roberties and De Roberties, Cell and Molecular Biology, Saunders college, Philadelphia.
2. E.J.Ambrose and Dorothy M.Easty, Cell Biology II Edn. The English Language Book Society and Nelson.
3. Mukherji, S. and Ghash A.K. 1996, Plant Physiology, Tata MC Graw Hill Publishing Company Limited, New Delhi.
4. Sharma P.D. 1989, Elements of Ecology, Rastogi Publications, Meerut.
5. Stebbin. G, 1971 Chromosome evolution in higher plants, Addison – Wesley, London.
6. Jha, A.P. Genes and Evolution, Macmillan India Ltd.
7. Priti Shukla, Shital P Misra – An introduction to Taxonomy of Angiosperm – Vikas Publishing House Pvt. Ltd., New Delhi.
8. Lyman Benson, Plant Classification, Oxford & IBH Publishing Company, New Delhi.
9. T. Subramanian (2000) - Developmental Biology