Subject Code : P8ZO11

CORE COURSE XI – ANIMAL PHYSIOLOGY

Unit I

Homeostatic mechanisms : ionic and osmoregulation in crustaceans and fishes – temperature and pH regulations in animals. Light – photobiological processes – pressure – acclimatization to high altitudes – Hydrostatic pressure – Buoyancy.

Unit II

Carbohydrate metabolism – Glycogenesis, Glycogenolysis, Glycolysis, Kreb's cycle, HMP pathway, Gluconeogenesis.
Protein metabolism – Deamiantion, transamination and transmethylation of aminoacids. Lipid metabolism-Oxidation and byosynthesis of fatty acids.
Integrated metabolism – Mineral metabolism (with spl ref to Na+, K+ and Ca2+).

Unit III

Respiration : Respiratory pigments and their functions – Exchange of gases – Transport of oxygen and carbon-di-oxide – Regulatory mechanisms.
Circulation: Chemistry of blood – inorganic and organic components their regulations and functions -blood pigments and functions – Types of transport mechanisms – Cardiac cycle – Blood Pressure –ECG.
Excretion : Excretion in relation to different habitates – Detoxication pathways of ammonia – Regulation of nitrogen excretion.

Unit IV

Muscles : Mechanism of muscle contraction- Regulation and energitics of contraction – Elctric organs.
Nervous co-ordination : Propagation and transmission of nerve impulse – Synaptic transmission. Bioluminescene – Biological clocks.

Unit V

Endrocrine glands in mammals – hypothalamus, Hypothesis, Pineal, Thyroid, Parathyroid, Pancreas, Adrenal, Testis and Ovary-Location and structure – Hormones and functions.
Physiology of reproduction : Mammalian reproductive physiology – Reproductive cycles – Hormonal control. Molecular mechanism of hormone action.

Recommended Text Books :

HOAR W.S. (1987) General and Comparative Physiology, Prentice Hall.

TURNER, C.D. and BAGNARA, J.T. (1976) General Endocrinology, 6th Edn., WB Saunders Co., Philadelphia.

Reference Books :

BALDWIN, E. (1964) An Introduction to Comparative Biochemistry, CUP, London.
BECK, W.S. (1971). Human Design, Harcourt Brace Joranorich Inc.,
DAWSON, H. (1964) General Physiology, Little Brown Co., Boston.
ECHERT, R. and RANDALL, D. (1987) Animal Physiology, CBS Publishers and Distributors
GIESE, A.C. (1979) Cell physiology and Biochemistry, Prentice Hall
GORDON, M.S., BARTHOLOMEW, G.A., GRILNELL, A.D., JORGENSEN, C.B., and WHITE.
F.N. (1971) Animal Function, Principles and Adaptation, Macmillan Co., London.
McFARLAND, D. (1986) Animal Behaviour – Psychobiology, Ethology and Evolution, English Language Boosk Society, Longman.
ROBERT M. BERINE and M.N. LEVY (1988) Physiology, - III Edn., St;Louis, Baltimore, Boston, Lodon.
SCHMIDT NEILSSEN, K. (1985) Animal Physiology – Adaptation and Environment, CUP, London.
TEDESCHI, H. (1993) Cell Physiology, Molecular Dynamics, II Edn., Won C. Brown publishers, Oxford, England.
WILSON, J.A. (1979) Principles of Animal Physiology
WOOD, W.S. (1968) Principles of Animal Physiology, Edward Arnold, London.