Subject Code : MBEAQ3

MAJOR BASED ELECTIVE – III AQUACULTURE BIOTECHNOLOGY.

Unit1:

Animal cells – collection and cryopreservation of animal cells, culture media, primary and established cultures. Transformation and genetics of animal cells.

Unit 2:

Kinetics of cell growth –logarithmic and stationery phases, metabolism and growth factors, interaction among cells-cell signaling, signaling pathways, cell proliferation, apoptosis.

Unit 3:

Basic concept-immunoglobulin – types of immunity (innate, acquired)- specific memory. Types of antigens – their structure –preparaton of antigens, rising antibodies – handling of animals- adjuvants and their mode of action. Antibodies and immunodiagnosis – ELISA, RIA.

Unit 4:

Introducing DNA into animal cells, injection, viral vectors, tissue culture in biomedical and biochemical research; regulatory proteins, blood products, vaccines and hormones.
Transgenic animals, fertilization and embryo transfer, foreign gene expression e.g.silkworm and baculoviruses (biocontrol) biotechnology of aquaculture and pest management.

Unit 5:

Mapping and sequencing of genome, Ethical issues in animal biotechnology, management aspects of biotechnology and genetic engineering.

References:

1. Animal Cells; culture and media b D.C. Darling and S.J.Morgan (1994) John Wiley and sons.
2. Advances biotechnology by (Ed) Digmathi et al.(1999) Discovery publishing home, N.Delhi.
3. Gene transfer and expression protocols –Methods in molecular biology Vol7 by (Ed) E.T.Murray (1991) Humana press.
4. Molecular biology of the Gene by J.D.Watson, N.H.Hopkins, J.W.Roberts, J.A.Steitz and A.M.Weiner (1987) Benjamin /Cummongs 4th Ed.Vol.1 &2
5. Genetic Engineering of animals by (Ed) a.Puhler (1993) VCH Publishers, Weinheim, FRG
6. Recombinant DNA 2 nd by (Ed). J.D.Watson, MGilman,J. Witknowski and M.Zoller (1992) Scientific American Books, NY/
7. Ivan M.Roitt Jonathan Brossoff and david K.Male (1985). Immunology (Glower medical publishing London). First edition.