Subject Code : MBEBI1

MAJOR BASED ELECTIVE – I: PLANT TISSUE CULTURE

UNIT- I

Basic techniques and tools:Establishment of plant tissue culture lab: equipment, culture vessels, surface sterilization of various explants,pretreatment of explant, subculture and repeated transfer of explants and cultures.

UNIT- II

Composition of various tissue culture media and their preparation- Establishment of callus, suspension cultures, organogenesis and embryogenesis,- Meristem tip culture- Hardening of plants.

UNIT- III

Techniques of anther, embryo and ovule culture- Protoplast isolation, culture and fusion.- Artificial seed (synthetic seed) - Cell line selection using selection pressure- Production of secondary metabolites- Cryopreservation.

UNIT -IV

Isolation and characterisation of nuclei and nucleoli, isolation and functional analysis of mitochondria, chloroplast. Preparation and analysis of genetic material -cell autoradiography, aspetic technique and media preparation of primary cultures, maintenance of secondary culture -cell line propogation -cells in suspension.

UNIT -V

Analysis of biosynthesis of cellular components by radioactive labeling of cultured cells. Plant cell structure and organisation of cell groups in tissue system. Mass culture of plant cell suspension, somaclones, mericloning, micropropagation.

REFERENCES:

1. Hurse P.I. and Patterson., M.K.Tissue culture, methods and applications,
2. Marchan,D.J. 1964.Handbook of Cell and Organ Culture (2nd ed).Burgess Pub.Co., Minneapolis, USA.
3. Animal cell culture course manual – cold spring warbor laboratory, Newyork.
4. Shanmugam, Laboratory Manual of Cell Biology,Macmillan, India.
5. Dixon, L.A. and R.A. Gonzales. Plant cell culture – A Practical Approach. Revan Press, New York.
6. Quak, F. 1981. Plant Tissue Culture: Methods and Applications in Agriculture. Academic Press, New York.