M.PH.2G.1 BIOTECHNOLOGY **3 Hrs/Week**

THEORY

UNIT-I

1. Nanotechnology: Introduction and History of Nanotechnology and Nanobiology General and Medical/Therapeutic applications of nanobiology and nanotechnology - Techniques used in nanotechnology.

UNIT-II

2. Genetic Engineering: Techniques of gene manipulation, cloning strategies, procedures, cloning vectors, expression vectors, recombination selection and screening. Application of R-

   DNA technology for the production and bioprocess technology of the following products: Insulin, Interferon, erythropoietin, Hepatitis B Vaccine, and Tissue plasminogen activator.

UNIT-III

3. Enzyme technology: Sources of enzymes, production, isolation and purification of enzymes. Applications of enzymes in pharmaceutical industry, therapeutics and clinical analysis.

UNIT-IV

4. Immuno technology: Hybridoma techniques, fusion methods for myeloma cells and b-lymphocytes. Selection and screening techniques, production and purification and monoclonal antibodies and their applications.

REFERENCES:

1. Selected topics in enzyme engineering by Wingard Jr. L.B.
2. Introduction to genetic engineering by R.W. old & S.B. primrose.
3. Therapeutic peptides & proteins, formulation, processing and delivery systems by Ajay K. Banga.
4. Gene transfer & expression protocols – methods in molecular Biology, Vol-VII, Edit by E.T. Murry.
5. Controlled and Novel Drug delivery by N.K. Jain.
6. Modern Pharmaceutics by G.S. Banker.
7. Novel drug Delivery by Y.W. Chein.