ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

IV SEMESTER **BIOTECHNOLGY** Time: 4Hrs/Week

BTH 4701 (3) **MICROBIOLOGY** Max.Marks: 100

w.e.f. 2016-2019("16AD") **SYLLABUS**

OBJECTIVES: To enable the students to

1. Comprehend the diversity of microorganisms.
2. Know the technique of culturing and studying Microorganisms.
3. Understand the applications of microbiology.
4. Understand the organization, replication and economic importance of viruses.

COURSE:

UNIT - I: DIVERSITY OF MICRO ORGANISMS

1. Introduction & History and development of Microbiology
2. Microbial Nutrition & Nutritional classification of bacteria
3. Gene recombination in Bacteria.
4. Ultrastructure of archaea, archaeal cell membrane, other cell structures.
5. Classification of Bacteria – Bergey's manual.

UNIT - II: METHODS IN MICROBIOLOGY – I

Sterilization methods – Terminology of Sterilization, disinfection, antiseptic, sanitization, germicide, microbiostasis, preservative and antimicrobial agents.

i. Physical control: Temperature (moist heat- autoclave, dry heat- hotair oven & incinerators),dessication, surface tension, osmotic pressure, radiation, UV light, filtration-LAF

ii. Chemical control: Antiseptics and disinfectants (halogens, alcohol, gaseous sterilization).

UNIT - III: METHODS IN MICROBIOLOGY – II

1. Culturing of Micro-organisms
   - Culture media – Composition & Types
   - Culturing Methods
   - Isolation of pure culture
2. Staining Methods
   - Simple Staining
   - Differential staining by (1) Gram Staining, (2) Acid fast Staining, (3) Endospore Staining.
   - Hanging Drop Method

UNIT - IV: MICROBIAL GROWTH & MEASUREMENT

1. Microbial Growth
   a. Growth rate & generation time, details of growth curve and its various phases.
   b. Concept of synchronous cultures, continuous and batch cultures (chemostat and turbidostat).
   c. Measurement of Growth
2. Pure cultures and culture characteristics. Maintenance and preservation of pure cultures.

UNIT - V: VIROLOGY

1. General characteristics of viruses, Structure, different shapes and symmetries with one example of each type.
2. Classification of viruses on the basis of nucleic acids, phages and animal cell viruses, examples of each and their importance.
3. Replication of Viruses
4. Bacteriophage viruses - Lytic & lysogenic cycles.
5. Structure- TMV, HIV, Hepatitis

REFERENCES:

1. A Text book of Microbiology – By R.C.Dubey, D.K.Maheshwari public. S.Chand 2005
2. Text of Microbiology – By Ananthanarayan and panikes
3. General Microbiology – By R.P.Singh Publi. Kalyan Publication 2005.
4. Microbiology – By cappuceino
5. Practical Microbiology – by Arya
6. Elements of Microbiology Vy Pelezar and Chan public. MCGREW-Hill International, New Delhi.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) , VISAKHAPATNAM

IV SEMESTER **BIOTECHNOLGY** Time: 3Hrs/Week

BTH 4751(2) **MICROBIOLOGY** Max. Marks: 50

w.e.f. 2016-2019("16AD") **PRACTICALS – II B**

OBJECTIVES: To enable the students acquire skills necessary to –

1. handle equipment needed for study of microorganisms
2. culture microbial study.
3. identify the staining techniques.

COURSE:

UNIT – I: Microbiological Examination of Organisms

1. Bacteria – E.coli, Streptococcus
2. Algae – Chalmydomonus
3. Fungi – yeast, Penicillium, Aspergillus

UNIT – II: Sterilization – Equipment for sterilization-Hot Air Oven, Autoclave, Laminar air flow chamber.

UNIT – III: Preparation of Culture media :

1. Nutrient Broth
2. Nutrient Agar
3. Maccanokey Agar
4. Potato Dextrose Agar

UNIT – IV: Microbial Culture – Methods

1. Innoculation Methods :

a. Streak method - i. Streaking on Plates

ii. Streaking on Slants

b. Serial Dilution

c. Pour Plate Method

d. Stab Method

UNIT – V: Staining Methods :

1. Simple Staining
2. Differential Straining
   i. Gram Staining
   ii. Acid fast staining

UNIT – VI: Microbiological Examination of Water

UNIT – VII: Microbiological Examination of Milk

UNIT – VIII: Bacterial Growth Curve.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER **BIOTECHNOLOGY** Time: 4Hrs/Week

BTH 1701 (3) **CELL BIOLOGY AND GENETICS** Max. Marks: 100

w.e.f 2017-2020 ('17AE') **SYLLABUS**

OBJECTIVES: To enable the students to –

- Understand the scope of Biotechnology.
- Know the principles of microscopy
- Understand the ultra structure of cells & cell division
- Understand the applications of statistics in Biology

COURSE:

UNIT- I: INTRODUCTION

1. Scope & Applications of Biotechnology
2. Microscopy :
   i. Compound microscopy – Numerical aperture & it's importance, resolving power, oil – immersion objectives & their significance.
   ii. Principles & Applications of Dark-field, phase – contrast, fluorescent microscopy.
   iii. Electron microscopy – Principle, Ray diagram & applications of TEM & SEM, Comparison between optical and electron microscope.

UNIT - II: PROKARYOTIC CELL

1. Bacterial morphology – General morphology of bacteria: shapes and sizes. Generalized diagram of typical bacterial cell.
2. Slime layer & Capsule, Flagella, Pili & fimbriae.
3. Cell wall – Gram positive & Gram negative
4. Bacterial chromosomal organization, plasmids – Types of plasmids.
5. Endospores – Structure, formation germination, basis of resistance.

UNIT - III: EUKARYOTIC CELL & CELL DIVISION

1. Structure and functions of nucleus, nuclear membrane, nucleoplasm, nucleolus, golgi complex, mitochondria, chloroplast endoplasmic reticulum, lysosomes, peroxisomes, glyoxysomes and vacuoles.
2. Plant cell wall
3. Concept of cell cycle, cell division – mitosis & meiosis.

UNIT - IV: MENDEL'S LAWS & INHERITANCE

1. Mendel's experiments – factors contributing to success of Mendel's experiments.
2. Mendel's laws – Laws of segregation, Law of Dominance
   Law of independent assortment
3. Deviations from Mendel's laws – Incomplete & co-dominance.
4. Penetration & Pleiotropism
5. Recessive & Dominant epistatic gene interactions (9:3:4, 12:3:1, 13:3)
6. Concept of multiple alleles.

UNIT - V: GENETIC INHERITANCE & BIOSTATISTICS

1. Linkage, recombination frequency factors, gene maps, interference & coincidence.
2. Mitotic crossing over
3. Sex determination in Drosophila
4. Transposable elements- Types, Structure, Mechanism and Example – AC-DS elements in Maize.
5. **Biostatistics:** Types of Data, Collection of Data, Primary & Secondary data, Classification & graphical representation of statistical data. Measures of central tendency (Mean, Median & Mode) and Dispersion. Measures of skewness and kurtosis.

REFERENCES:

1. Cell and Molecular Biology – by De Robertis – Waverly Publication
2. Cell Biology and Genetics – by P.K.Gupta
3. Genetics – B.D.Singh 2003 – Kalyani Publication
4. Concepts of Genetics – Klug & Cummings 2003 – Pearson education, Delhi.
5. Genetics – strickberger.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER **BIOTECHNOLOGY** Time:3 Hrs/Week

BTH 1751 (2) **CELL BIOLOGY & GENETICS** Marks: 50

w.e.f. 2017 – 2020 ('17AE**')** **PRACTICAL – I A**

I. Microscope – Different parts and their function

II. Methods in Cytology:

A. Cytological Preparation

Fixation, Dehydration and Staining

B. Squash Preparation - Mitosis (Onion Root Tip)

Meiosis (Onion / Maize flower bud)

Karyotype (Onion Root Tip)

III. Genetics & Biostatistics

A. Solving problems in

- Monohybrid ratio
- Dihybrid ratio
- Incomplete dominance
- Linkage & Crossing over

B. Problems on Mean, Median, Mode, Graphical representation of statistical data,

Measures of dispersion.

** ** **

ST. JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

VI SEMESTER **BIOTECHNOLOGY** TIME: 3 Hrs/week

BTH-E1-6701(3) **INDUSTRIAL, MEDICAL, AGRICULTURAL AND ENVIRONMENTAL BIOTECHNOLOGY** Max.Marks:100

W.e.f. 2015 – 2018 ("15AC" Batch) **SYLLABUS**

OBJECTIVES: To enable the students to -

- Understand the role of biotechnology in industries.
- Know the use of microbes in the preparations of food and dairy product.
- Understand the role of biotechnology in the environment such bioremediation.

COURSE:

UNIT – I: INDUSTRIAL BIOTECHNOLOGY – I

a. Introduction to industrial biotechnology.
b. Primary and secondary metabolic products of micro organisms.
c. Screening, isolation and preservation of industrial microorganisms.
d. Fermentation technology – principle, design and process. Definition of Bioreactor, Types of bioreactors – Batch, Fed- batch, Continuous.

UNIT – II: INDUSTRIAL BIOTECHNOLOGY – II

a. Ethanol production by fermentation using Molasses, Starchy substances. Production of alcoholic beverages- Beer & Wine.
b. Production of Citric acid by submerged & solid state fermentation.
c. Fermentative production of microbial enzymes – Amylase & Protease and antibiotics - Penicillin.
d. Fermentative production of foods.
e. Fermentative production of dairy products.

UNIT – III: MEDICAL BIOTECHNOLOGY

a. Production of health care products through r-DNA technology (insulin, hepatitis B vaccines)
b. Production of targeted proteins – human growth hormones, – production of alpha and beta interferon's, monoclonal antibodies
c. Good manufacturing practice, biosafety issues, bioethics
d. IPR and patenting issues

UNIT – IV: ENVIRONMENTAL BIOTECHNOLOGY

a. Introduction to environmental biotechnology.
b. Energy resources – Renewable and Non-Renewable
c. Treatment of municipal and industrial effluent
d. Degradation of pesticides and toxic chemicals

UNIT – V: AGRICULTURAL BIOTECHNOLOGY

a.Biopesticides and Biofertilizers (nitrogen fixing, phosphate solubilizing microorganisms)
b. Microbial leaching
c. Bioremediation - Biodegradation of recalcitrant compounds and the role of genetically engineered microbes.
d. SCP – SCP organisms and production

REFERENCES:

1. Food microbiology by M.R. Adams and M.O. Moss.
2. Industrial microbiology by L.E. Casida
3. Biotechnology and IPR'S and Biodiversity by M.B. Rao and Manjula
4. Bioprocess Engineering by Shuler (Pearson education)
5. Biotechnology – U. Satyanarayana.

** ** **

ST. JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

VI SEMESTER **BIOTECHNOLOGY** TIME:2 Hrs/week

BTH-E1-6751(2)**INDUSTRIAL,MEDICAL,AGRICULTURALAND ENVIRONMENTAL BIOTECHNOLOGY** Max.Marks:50

W.e.f. 2015 – 2018("15AC" Batch) **PRACTICAL SYLLABUS – IV**

OBJECTIVE: To enable the student to apply the different principles of Biotechnology in the preparation of different industrial products

COURSE:

1. Production of wine using yeast
2. Production of hydrogen and biogas using cow dung
3. Production of alcohol by fermentation & estimation of alcohol by Colorimetry
4. Production of Biofertilizers (*Azolla*)
5. To determine the dissolved oxygen (DO)
6. To find out the salinity in water
7. Isolation of *Rhizobium*

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **BIOTECHNOLOGY** TIME: 3 Hrs/Week

BTH 5701 (3) **GENETIC ENGINEERING** Max. Marks: 100

w.e.f 2015-2018(AC) **SYLLABUS**

OBJECTIVES: To enable the students to –

- learn recombinant DNA technology , and
- acquire techniques involved in gene transfer and r-DNA technology blotting techniques, DNA fingerprinting, sequencing , etc.,

COURSE:

UNIT – I: RECOMBINANT DNA TECHNOLOGY – 1

1. r-DNA technology – Isolation and cutting of DNA molecule
2. Steps in r-DNA technology.
3. Classification of Restriction endonucleases. Enzyems used in molecular cloning: Polymerases, ligases, phosphatases, methylases, Kinases and nucleases.

UNIT – II: RECOMBINANT DNA TECHNOLOGY – 2

1. Cloning vehicles – plasmids, PBR-322, phages, cosmids, shuttle vectors
2. Genomic libraries – Genomic and c-DNA libraries
3. Expression of cloned genes
4. Factors influencing the expression of foreign genes.

UNIT – III: GENE TRANSFER TECHNIQUES

1. Cutting and joining DNA - Methods of blunt end ligation and Cohesive end ligation (Linkers, adaptors and homo polymer tailing)
2. Transfection and transformation. Selection of transformed cells. Screening methods (genetic markers and blue white screening).
3. Transformation selection of transformed cells and screening methods (genetic markers and blue white screening)

UNIT – IV: TECHNIQUES IN GENETIC ENGINEERING

1. Blotting techniques – Southern, Northern & Western blotting
2. Polymerase chain Reaction (PCR)
3. Restriction fragment length polymorphisms (RFLP's)
4. Random amplification polymorphic DNA's (RAPD's)
5. DNA sequencing
6. DNA fingerprinting

UNIT-V: BIOINFORMATICS

1. Introduction of Bioinformatics.
2. Sequence information sources- EMBL, GENBANK, Entrez, Unigene.
3. Protein information sources – PDB, SWISSPROT, TREMBL.
4. Sequence similarity searches – BLAST, FASTA.

REFERENCES :

1. Principles of gene manipulations-by R.W.Old and S.B.Primrose, Blackwell publications
2. Genetic Engineering by Boylan, Pearson education
3. Genetic Engineering and Biotechnology by V.Kumar Gera
4. Genetic Engineering by R.Williamson, publ:Academic press.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

II SEMESTER	**BIOTECHNOLOGY**	Time: 4Hrs/Week
BTH 2701 (3)	**TECHNIQUES IN BIOTECHNOLOGY**	Max. Marks: 100
w.e.f:2017 -2020 ('17AE')	**SYLLABUS**	

OBJECTIVES: To enable the students to –

- Develop familiarity with important biochemical & Biophysical techniques employed in biotechnological work.

COURSE:

UNIT I: SPECTROPHOTOMETRY

1. Concept of Electromagnetic radiations, spectrum of light, absorption of Electromagnetic radiations, absorption spectrum & its uses, Beer – lambert's law.
2. Colorimeter. Instrumentation of UV & Visible spectrophotometry, double beam spectrophotometer.
3. Application of UV & Visible spectrophotometry.

UNIT II: CHROMATOGRAPHY

Chromatography: Principle, Methodology & Applications of

1. Paper chromatography.
2. Thin – layer chromatography
3. Gel filtration chromatography.
4. Ion exchange chromatography
5. Affinity chromatography

UNIT III: ELECTROPHORESIS

1. Migration of ions in electric field, factors effecting Electrophoretic mobility.
2. Paper Electrophoresis: Electrophoresis run, detection techniques, cellulose acetate electrophoresis,
3. Gel Electrophoresis: Types of gels, procedure, column and slab gels, detection, Recovery & estimation of macromolecules.
4. SDS – PAGE: Applications, determination of molecular weight of Protein, Molecular biology applications.
5. Isoelectric focusing: Principle, Establishing P^H, procedure and applications.

UNIT IV: ISOTOPIC TRACER TECHNIQUE:

1. Radioactive & stable isotopes, Rate of radioactive decay, units of radioactivity.
2. Measurement of Radioactivity: Ionization chamber, propositional counter, Geiger – Muller counter, solid & liquid scintillation counter (basic principle, Instrumentation & technique).
3. Applications of isotopes in biotechnology (distribution studies, metabolic studies, isotope dilution technique, clinical applications in autoradiography).

UNIT V: CENTRIFUGATION:

1. Basic principles, concept of RCF, Ultra centrifuge - Types
2. Preparative centrifugation: Differential & density gradient centrifugation, applications (isolation of cell components).
3. Analytical Centrifugation: Light absorption system, alternative schlieren system, Rayleigh interference system.
4. Dialysis & lyophilization.

REFERENCES:

1. Plummer – DT (1988) an introduction to practical Biochemistry. Tata McGraw Hill Co, New Delhi.
2. Wilson, K & Goulding K.M.(1986) A Biologist Guide to Principles & Techniques of Practical Biochemistry ELBS Public, New Delhi.
3. Stryer L (2000) Biochemistry – Freeman Toppan Delhi.
4. Lehriger (2000), Biochemistry Wortlo – Delhi.
5. Upadhyay, Upadhyay (2002) , Biophysical and Chemical Techniques, Himalayas Publications, New Delhi .

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

II SEMESTER **TECHNIQUES IN BIOTECHNOLOGY** Time: 3Hrs/Week

BTH 2751(2) **PRACTICALS – I B** Marks: 50

w.e.f: 2017 -2020 ("17AE")

OBJECTIVES:

To enable the students to acquire the knowledge in techniques & instrumental handling in biotechnology.

1. Colorimeter – verification of Beer – Lambert's law
2. Thin layer Chromatography separation of amino acids.
3. Paper Chromatography separation of Amino Acids.
4. Dialysis Demonstration.
5. Agarose gel electrophoresis
6. SDS - PAGE.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **BIOTECHNOLOGY** TIME: 3 Hrs/Week

BTH 5702 (3) **PLANT AND ANIMAL BIOTECHNOLOGY** Max. Marks: 100

w.e.f 2015-2018(AC) **SYLLABUS**

OBJECTIVES: To enable the students to –

- Acquire knowledge about Plant tissue culture its uses and techniques involved in tissue culture
- Study Animal biotechnology which include Artificial insemination, invitro fertilization and embryo transfer.

COURSE:

PLANT BIOTECHNOLOGY

UNIT – I: PLANT TISSUE CULTURE

a. Composition of media (MS and Gamborg's only). Preparation of media and methods of sterilization.
b. Role of plant growth regulators in differentiation.
c. Initiation & maintenance of Callus and suspension cultures; Single cell clones.

UNIT – II: APPLICATIONS OF TISSUE CULTURE

a. Meristem culture and production of virus free plants. Somatic embryogenesis and organogenesis.
b. Micro-propagation, regeneration, production of haploids, protoplast culture and somatic hybridization.
c. Mass cultivation of cell cultures and process engineering –batch and continuous culture Bioreactor
d. Production of commercially useful compounds by plant cell culture

UNIT – III: GENE TRANSFER IN PLANTS

a. Gene transfer through Agrobacterium, Ti plasmid.
b. Applications of r-DNA technology in agriculture (Bt-cotton, Golden Rice)
c. Production of therapeutic proteins from transgenic plants

ANIMAL BIOTECHNOLOGY

UNIT – IV: ANIMAL CELL CULTURE

a. Introduction to Animal Biotechnology
b. Principles of animal cell culture – culture vessel
c. Cell culture media preparation, sterilization, types of cultures
d. Characteristics of cells in culture: Contact inhibition, anchorage dependence, cell-cell communication etc., Cell senescence; cell and tissue response to trophic factors. Immortal cells, cell lines
e. Maintenance & Preservation of cell lines.

UNIT – V: APPLICATIONS OF ANIMAL BIOTECHNOLOGY

a. Invitro fertilization and embryo transfer technology.
b. Production of transgenic animals and molecular pharming (mice, sheep).

REFERENCES:

1. Plant tissue culture-Basic and Applied-by Timir Baran Jhan and B.Ghosh
2. Essential of biotechnology for students by Satya N.Das
3. Plant tissue culture by Kalyan Kumar De -
4. Animal cell as bioreactor – by Terence Gartoright, Cambridge university press
5. Introduction to verterinary genetics by F.W.Nicholas, Oxford university press.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **BIOTECHNOLOGY** TIME: 3 Hrs/Week

BTH 5751 (2) **GENETIC ENGINEERING** Max. Marks: 50

w.e.f 2015-2018(AC) **PRACTICAL SYLLABUS – III A**

OBJECTIVES : To enable the students learn the techniques of genetic engineering.

COURSE : Experiments on

a. Basic transformation
b. Isolation of plasmid DNA
c. Restriction digestion of DNA
d. Ligation of DNA
e. PCR
f. DNA Fingerprinting

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **BIOTECHNOLOGY** TIME: 2 Hrs/Week

BTH 5751 (2) **GENETIC ENGINEERING** Max. Marks: 50

w.e.f 2015-2018(AC) **PRACTICAL SYLLABUS – III B**

OBJECTIVES: To enable the students to acquire the techniques and inoculation methods in plant tissue culture.

COURSE: Experiments on

a. Preparation of MS media & it's chemical composition
2. Preservation of tissue culture plants under cold conditions
3. Pollen culture
4. Seed culture
5. Anther culture

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

III SEMESTER **BIOTECHNOLGY** Time: 4 Hrs/Week

BTH 3701 (3) **MOLECULAR BIOLOGY** Max. Marks: 100

w.e.f. 2016 – 2019 ('16AD') **SYLLABUS**

OBJECTIVES: To enable the students

- To understand the organization and function of DNA and RNA at molecular level.
- To comprehend the concepts of gene expression and regulation of gene expression.
- To understand the molecular basis of mutations.

COURSE:

UNIT I: GENE & GENOME ORGANISATIONS

1. Identification of DNA and RNA as genetic material; Structure of DNA by Watson & Crick model
2. Organization of nuclear genome – genes and gene numbers; Satellite DNA
3. Mitochondrial genome organization (Eg: Humans)
4. Chloroplast genome organization in plants.
5. Gene Families and clusters (Eg: Globin genes, histones).

UNIT II: REPLICATION OF DNA

1. DNA Replication – Models of DNA Replication semi-conservative, Proof of semi conservative replication.
2. Mechanism of DNA replication in Eukaryotes – linear method.
3. Enzymology of replication (DNA polymerase I, pol II and III, helicases, topoisomerases, single strand binding proteins, DNA melting proteins, primase).
4. Mechanism of DNA replication in prokaryotes
   a. Rolling circle method b. Theta mechanism
5. Gene mutations: Mutagenesis – Spontaneous and induced (chemical and physical) mutations; Natural and induction of mutations, point mutations, frameshift mutations, auxotrophic conditional and suppressor mutations.
6. DNA damage & repair: Light induced repair, Excision repair and Mismatch repair, Post replication repair, Rec gene and its role in DNA repair, SOS repair and SOS response.

UNIT III: TRANSCRIPTION:

1. Prokaryotic Transcription- Structure of prokaryotic RNA polymerase (core enzyme & holoenzyme, sigma factor), Exons, introns, Promoter (Pribnow box, -10, and -35 sequence), and Terminators; Transcription process.
2. Eukaryotic transcription
3. Post – transcriptional modifications (capping, polyadenylaiton, splicing & alternate splicing)
4. Poly and Mono cistronic mRNA.
5. Reverse transcription.

UNIT IV: TRANSLATION:

1. Genetic Code and its feature & Wobble Hypothesis. Structure of mRNA, tRNA.
2. Translation – Synthesis of polypeptides – Initiation, elongation and termination in prokaryotes.
3. Translation – Synthesis of polypeptides – initiation, elongation and termination in eukaryotes.

UNIT V: REGULATION OF GENE EXPRESSION:

1. Regulation of gene expression in Prokaryotes; Operon concept – Negative and positive control of the Lac operon, trp operon, Control of gene expression.
2. Regulation of gene expression in Eukaryotes

REFERENCES:

1. Cell and Molecular Biology by Robertis & Robertis, public. Waverly (2001) 8th Edition.
2. Molecular Biology of the Gene – By Watson, Hopkins, Goberts , Steitz & Weiner Publi. Pearson Education (2002)
3. Principles of Gene Mnipulation – By R.W. Old ANA S.B.Primson Publi. Warosa 6th Edition (2003)
4. Molecular Biology & Biotechnol – By H.D. Kumar Publi. Vikas (2005)
5. Cell Biology & Genetics by Varma & Agarwal (2008-2009) S.Chand Publications.
6. Genome 3 – T.A Brown .

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) , VISAKHAPATNAM

III SEMESTER **BIOTECHNOLGY** TIME : 3 Hrs/Week

BTH 3751 (2) **MOLECULAR BIOLOGY** Max. Marks: 50

w.e.f. 2016-2019("16AD") **PRACTICALS SYLLABUS – II A**

OBJECTIVES : To enable the students to –

a. gain skills necessary for study of molecular biology.

COURSE :

I : Isolation of RNA from yeast.

II : Isolation of DNA from coconut endosperm.

III : Estimation of phosphorus .

IV : Isolation of chromosomal & plasmid DNA from bacteria .

V : Estimation of RNA by Orcinol method.

VI : Estimation of DNA by Diphenyl amine method.

** ** **