

B.SC 3rd SEMESTER 2020-2021(EVEN SESSION)
SONIKA BIOTECHNOLOGY DEPARTEMENT
SUBJECT BIOINFORMATICS

Week 1

Day 1, Date: 20th April 2021

TOPIC: History, scope and importance of bioinformatics

Day 2, Date:21th April 2021-HOLIDAY

TOPIC- Introduction to Genomics

Day 3, Date 22th2021

TOPIC: information flow in Biology

Week 2

Day 1, Date: 29th April 2021

TOPIC: DNA sequence data,

Day 2, Date:30th April 2021-HOLIDAY

TOPIC- experimental approach to genome sequence data

Day 3, Date 1st MAY 2021

TOPIC: Genome information resources.

Week 3

Day 1, Date 6th MAY 2021

TOPIC:Computational Genomics

Day2, Date 7th MAY 2021

TOPIC:Internet basics

Day 3, Date 8th MAY 2021

TOPIC: Biological data analysis a

Week 4

Day 1, Date 13th MAY 2021

TOPIC:NCBI model

Day2, Date 14th MAY 2021 HOLIDAY

TOPIC: Protein sequence

Day 3, Date 15th MAY 2021

TOPIC: Protein sequence

Week 5

Day 1, Date 20th MAY 2021

TOPIC: Secondary data base

Day2, Date 21th MAY 2021 HOLIDAY

TOPIC: Genome information resource

Day 3, Date 22th MAY 2021

TOPIC: Genome information resource

Week 6

Day 1, Date 27th MAY 2021

TOPIC:protein sequence and structural data,

Day2, Date 28th MAY 2021 HOLIDAY

TOPIC:protein information

Day 3, Date 29th MAY 2021

TOPIC:PIR

Week 7
Day 1, Date 3 rd JUNE 2021 TOPIC: Data base search
Day2, Date 4 th JUNE2021 HOLIDAY TOPIC: Protein primary sequence analysis
Day 3, Date 5 th JUNE 2021 TOPIC:DATA base searching using BLAST
Week 8
Day 1, Date 10 th JUNE 2021 TOPIC:FASTA
Day2, Date 11 th JUNE 2021 HOLIDAY TOPIC: Protein data bank
Day 3, Date 12 th JUNE 2021 TOPIC: Protein data bank
Week 9
Day 1, Date 17 th JUNE 2021 TOPIC:DNA and protein sequences
Day2, Date 18 th JUNE 2021 HOLIDAY TOPIC:Predictive methods using DNA
Day 3, Date 19 th JUNE 2021 TOPIC:Sequence alignment
Week 10
Day 1, Date 24 th JUNE 2021 TOPIC: Protein information resource
Day2, Date 25 th JUNE 2021 HOLIDAY TOPIC:Small molecules data bases
Day 3, Date 26 th JUNE 2021 TOPIC:Structural data bases

SONIKA
BIOTECHNOLOGY DEPARTEMENT
B.SC IInd SEMESTER(EVEN SEMESTER)

Week 01

Day 1, Date: 19th APRIL 2021
TOPIC: Introduction and Scope of Microbiology

Day 2, Date: 20th APRIL -2021
TOPIC: Definition and history of microbiology

Day 3, Date: 21th APRIL 2021 **HOLIDAY**

Week 02

Day 1, Date: 26th APRIL 2021
TOPIC: contributions of Antony van Leeuwenhoek,

Day 2, Date: 27^h APRIL 2021
TOPIC: Pasteur, Robert Koch, I

Day 4, Date: 28th APRIL -2021
TOPIC: scope of Microbiology

Week 03

Day 1, Date: 3rd MAY 2021
TOPIC: Microbial techniques Sterilization

Day 3, Date: 4th MAY 2021
TOPIC: Principles and Applications of a. Physical Methods

Day 4, Date: 5th MAY 2021
TOPIC: Autoclave, Hot air oven,

Week 04

Day 1, Date: 10th MAY 2021
TOPIC: Alcohol, Aldehydes, Phenols, Halogens and Gaseous agents

Day 2, Date: 12th MAY 2021
TOPIC: Radiation Method

Day 3, Date: 13th MAY 2021
TOPIC: Microscope Construction and working principles of different types of microscopes

Week 05

Day 1, Date: 17th MAY 2021
TOPIC: Microbial Taxonomy

Day 2, Date: 18th MAY 2021
TOPIC: Concept of microbial species and strains, c

Day 3, Date: 19th MAY 2021
TOPIC: classification of bacteria

Week 06

Day 1, Date: 24th MAY 2021
TOPIC: A. Bacteria

Day 3, Date: 25th MAY 2021
TOPIC: Ultrastructure of bacteria cell

Day 4, Date: 26th MAY 2021

TOPIC: Viruses – Structure and classification
Week 07
Day 1, Date: 1 st JUNE 2021 TOPIC: Bacterial diseases of man – tetanus, Tuberculosis, Pneumonia and Cholera
Day 2, Date: 2 nd JUNE 2021 TOPIC: Viral diseases: AIDS (HIV)
Day 3, Date: 3 rd JUNE 2021 TOPIC: Microbial Growth and Metabolism
Week 08
Day 1, Date: 7 th JUNE 2021 TOPIC: Kinetics of microbial growth, g
Day 2, Date: 8 th JUNE 2021 TOPIC: HMP
Day 3, Date: 9 th JUNE 2021 TOPIC: EMP
Week 09
Day 1, Date: 14 th JUNE 2021 TOPIC: Growth curve, Types
Day 2, Date: 15 th JUNE 2021 TOPIC: Growth curve,
Day 3, Date: 16 th JUNE 2021 TOPIC: Growth Respiration:
Week 10
Day 1, Date: 21 st JUNE 2021 TOPIC: Kreb's cycle
Day 2, Date: 22 nd JUNE 2021 TOPIC: HMP and ED Pathways
Day 3, Date: 23 rd JUNE 2021 TOPIC: HMP and ED Pathways

Name of the Teacher – Ms. Kajal Sahni
Subject- Biochemistry II
Paper- IV
Class- B.Sc. I

Week 04 TOPIC:- Enzymes
Day 4, Date: 22-04-2021 TOPIC: Introduction, active site, energy of activation
Day 5, Date: 23-04-2021 TOPIC: transition state hypothesis
Day 6, Date: 24-04-2021 TOPIC: lock and key hypothesis

Week 05
Day 4, Date: 29-04-2021 TOPIC: induced fit hypothesis
Day 6, Date: 01-05-2021 TOPIC: Enzyme classification
Week 01 TOPIC:- Enzyme Kinetics
Day 4, Date: 06-05-2021 TOPIC: substrate concentration, Km, Vmax
Day 5, Date: 07-05-2021 TOPIC: MM equation
Day 6, Date: 08-05-2021 TOPIC: Lineweaver Burk plot/Double reciprocal plot
Week 02
Day 4, Date: 13-05-2021 TOPIC: Effect of pH, temperature on enzyme activity
Day 6, Date: 15-05-2021 TOPIC: Allosteric enzymes
Week 03
Day 4, Date: 20-05-2021 TOPIC: Enzyme Inhibition – Competitive, non-competitive and uncompetitive inhibition
Day 5, Date: 21-05-2021 TOPIC: Vitamins and Hormones: Introduction
Day 6, Date: 22-05-2021 TOPIC: Types of vitamins – structure of water soluble vitamins and their coenzyme derivatives, Fat soluble vitamins
Week 04
Day 4, Date: 27-05-2021 TOPIC: Deficiency symptoms and dietary sources
Day 5, Date: 28-05-2021 TOPIC: Steroid Hormones: structure and importance
Day 6, Date: 29-05-2021 TOPIC: Peptide Hormones: structure and function of important peptide hormones
Week 05
Day 1, Date: 31-05-2021 TOPIC: TEST
Week 01
Day 4, Date: 03-06-2021 TOPIC: Metabolism: General introduction
Day 5, Date: 04-06-2021 TOPIC: catabolism and anabolism
Day 6, Date: 05-06-2021 TOPIC: Carbohydrates metabolism: Glycolysis, Tricarboxylic acid cycle
Week 02
Day 4, Date: 10-06-2021 TOPIC: Carbohydrates metabolism: Gluconeogenesis Glycogenolysis
Day 5, Date: 11-06-2021

TOPIC: glycogen synthesis and their regulation
Day 6, Date: 12-06-2021 TOPIC: Lipid Metabolism: β -oxidation of fatty acids
Week 03
Day 4, Date: 17-06-2021 TOPIC: Degradation of Triacylglycerols
Day 5, Date: 18-06-2021 TOPIC: Synthesis of Fatty acids
Day 6, Date: 19-06-2021 TOPIC: Amino acid Metabolism: Transamination, oxidative deamination, decarboxylation. Urea cycle
Week 04
Day 4, Date: 24-06-2021 TOPIC: Different classes of oxidation and synthesis of amino acids
Day 6, Date: 26-06-2021 TOPIC: Glycogenic and ketogenic amino acids

Name of the Teacher – Ms. Kajal Sahni
Subject- Recombinant DNA Technology
Paper- VIII
Class- B.Sc. II

Week 04
Day 5, Date: 19-04-2021 TOPIC: Recombinant DNA Technology and Genetic Engineering: Introduction, history, scope and applications.
Day 6, Date: 20-04-2021 TOPIC: Tools of Recombinant DNA technology: Steps in gene cloning. Gene cloning tools – Restriction enzymes- class I, II and class III restriction enzymes, their features
Week 05
Day 1, Date: 26-04-2021 TOPIC: Ligases, polymerases, alkaline phosphatases, kinases, transferases and other DNA engineering enzymes.
Day 3, Date: 28-04-2021 TOPIC: Gene Cloning Vectors: Introduction, nomenclature of vectors, properties of a suitable vector. Plasmid vectors,
Week 01
Day 1, Date: 03-05-2021 TOPIC: bacteriophage, cosmids
Day 2, Date: 04-05-2021 TOPIC: phagemids. Properties of host. M13 vectors
Day 3, Date: 05-05-2021 TOPIC: Expression vectors, shuttle vectors.

Week 02
Day 1, Date: 10-05-2021 TOPIC: Vectors for cloning in eukaryotic cells, YACs and BACs
Day 2, Date: 11-05-2021 TOPIC: In vitro construction of r-DNA molecules
Day 3, Date: 12-05-2021 TOPIC: Doubt Class
Week 03
Day 1, Date: 17-05-2021 TOPIC: Integration of DNA inserts into the vectors, Transformation:
Day 2, Date: 18-05-2021 TOPIC: Transformation
Day 3, Date: 19-05-2021 TOPIC: Transformation:
Week 04
Day 1, Date: 24-05-2021 TOPIC: Gene Libraries:
Day 2, Date: 25-05-2021 TOPIC: Gene Libraries:
Week 05
Day 1, Date: 31-05-2021 TOPIC: PCR And Types
Week 01
Day 2, Date: 01-06-2021 TOPIC: PCR And Types
Day 3, Date: 02-06-2021 TOPIC: DNA Sequencing
Day 4, Date: 03-06-2021 TOPIC: DNA Sequencing
Week 02
Day 1, Date: 07-06-2021 TOPIC: Genome Mapping
Day 2, Date: 08-06-2021 TOPIC: Genome Mapping
Day 3, Date: 09-06-2021 TOPIC: Genome Mapping
Week 03
Day 1, Date: 14-06-2021 TOPIC: Gene expression in prokaryotes
Day 2, Date: 15-06-2021 TOPIC: Gene expression in prokaryotes
Day 3, Date: 16-06-2021 TOPIC: Doubt Class
Week 04
Day 1, Date: -21-06-2021 TOPIC: Applications of Recombinant DNA technology:

Day 2, Date: 22-06-2021 TOPIC: Applications of Recombinant DNA technology:
Day 3, Date: 23-06-2021 TOPIC: Doubt Class

Name of the Teacher – Ms. Ritu
Subject- Microbial Biotechnology
Paper- XIII
Class- B.Sc. III

Week 03
Day 4, Date: 15-04-2021 Topic: Microbial Biotechnology: Historical landmarks, General concept
Day 5, Date: 16-04-2021 Topic: Screening and Isolation of Micro organisms: Industrially important microbes
Day 6, Date: 17-04-2021 TOPIC: Bioconversions – Biomining and bioleaching. Biogas production
Week 04
Day 4, Date: 22-04-2021 TOPIC: screening and isolation, enrichment culture.
Day 5, Date: 23-04-2021 TOPIC: Strain improvement- bacterial genetics, mutant selection,
Day 6, Date: 24-04-2021 TOPIC: recombination, recombinant DNA technology, Strain preservation and maintenance
Week 05
Day 4, Date: 29-04-2021 TOPIC: Nutrition and cultivation of microorganisms
Day 5, Date: 30-04-2021 TOPIC: Basic nutrition and metabolism, Natural and Synthetic media
Day 6, Date: 01-05-2021 TOPIC: Sterilization techniques, Microbial growth kinetics
Week 01
Day 4, Date: 06-05-2021 TOPIC: TEST
Day 5, Date: 07-05-2021 TOPIC: Fermentation types – Continuous, Batch fed culture, Solid state and Submerged.

Day 6, Date: 08-05-2021 TOPIC: Quantification of growth, thermodynamics of growth, effect of different factors on growth.
Week 02
Day 4, Date: 13-05-2021 TOPIC: Microbial Fermenters/Bioreactors: Basic design of fermenters.
Day 6, Date: 15-05-2021 TOPIC: : Physico-chemical standards used in bioreactors (ph, temp., dissolved oxygen etc.).
Week 03
Day 4, Date: 20-05-2021 TOPIC: TEST
Day 5, Date: 21-05-2021 TOPIC: Process Development and Downstream Processing, Shake flask fermentation, scale up of the process.
Day 6, Date: 22-05-2021 TOPIC: Downstream processing – Separation of particles, disintegration of cells, extraction, concentration, purification and drying of the products.
Week 04
Day 4, Date: 27-05-2021 TOPIC: Microbial Products: a brief discussion about production of certain industrial products such as – Alcohol, Alcoholic beverage (Beer),
Day 5, Date: 28-05-2021 TOPIC: Types of fermenters stirred tank, bubble column, airlift etc.
Day 6, Date: 29-05-2021 TOPIC: Organic acids (citric acid), Antibiotics (penicillin), Amino acids (glutamic acid and Vitamin (B12)
Week 05
Day 4, Date: 03-06-2021 TOPIC: TEST
Day 5, Date: 04-06-2021 TOPIC: Microbial Foods: Single Cell Proteins, Biodegradation of xenobiotic compounds
Day 6, Date: 05-06-2021 TOPIC: Sewage waste water treatment technique and plants
Week 02
Day 4, Date: 10-06-2021 TOPIC: enzymes (protease, alpha-amylase)
Day 5, Date: 11-06-2021 TOPIC: Microbial polysaccharides and polyesters
Day 6, Date: 12-06-2021 TOPIC: production of xanthan gum and polyhydroxyalkanoides (PHA).

Week 03
Day 4, Date: 17-06-2021 TOPIC: biocontrol agents for disease control, advantages over chemical methods
Day 5, Date: 18-06-2021 TOPIC: Microbial technology in agriculture- Bioinsecticides, bioherbicides, Biofertilizers.
Day 6, Date: 19-06-2021 TOPIC: TEST
Week 04
Day 5, Date: 25-06-2021 TOPIC: concept and technique; use of GEM in Agriculture, Industry and Medicine
Day 6, Date: 26-06-2021 TOPIC: brief account of Steroid Biotransformation

Name of the Teacher – Ms. Kajal Sahni
Subject- Principles of Genetic Engineering
Paper- BT- 107
Class- B.Sc. II

Week 04 TOPIC-Genetic Engineering
Day 1, Date: 19-04-2021 TOPIC: Introduction and scope of Genetic Engineering
Day 2, Date: 20-04-2021 TOPIC: Miles stones in Genetic engineering, Central role of <i>E.coli</i> .
Day 4, Date: 22-04-2021 TOPIC: Purification of total cell DNA
Day 5, Date: 23-04-2021 TOPIC: plasmid DNA, phage DNA
Day 6, Date: 24-04-2021 TOPIC: Yield Analysis, Nucleic acid blotting and hybridization
Week 05
Day 1, Date: 26-04-2021 TOPIC: DNA modifying enzymes
Day 3, Date: 28-04-2021 TOPIC: DNA modifying enzymes
Day 4, Date: 29-04-2021 TOPIC: Restriction Endonucleases
Day 6, Date: 01-05-2021

TOPIC: Restriction Endonucleases
Week 01 TOPIC- Gene Cloning Vectors
Day 1, Date: 03-05-2021 TOPIC: Ligases
Day 2, Date: 04-05-2021 TOPIC: General features
Day 3, Date: 05-05-2021 TOPIC: Types of cloning vectors- Plasmid
Day 4, Date: 06-05-2021 TOPIC: bacteriophage
Day 5, Date: 07-05-2021 TOPIC: phagemid,cosmid
Day 6, Date: 08-05-2021 TOPIC: artificial chromosomes
Week 02 TOPIC-Transformation of <i>E. coli</i>
Day 1, Date: 10-05-2021 TOPIC: Transformation of <i>E. coli</i> -Concept
Day 2, Date: 11-05-2021 TOPIC: Selection of transformed cells, Identification of recombinants
Day 3, Date: 12-05-2021 TOPIC: Identification of recombinants
Day 4, Date: 13-05-2021 TOPIC: Cloning of Specific Gene- Direct selection
Day 6, Date: 15-05-2021 TOPIC: Identification from a gene library
Week 03
Day 1, Date: 17-05-2021 TOPIC: Identification from a gene library
Day 2, Date: 18-05-2021 TOPIC: Screening strategies- Colony and plaque hybridization
Day 3, Date: 19-05-2021 TOPIC: Abundancy probing, Heterologus probing
Day 4, Date: 20-05-2021 TOPIC: Immunological screening, Differential screening, Subtractive hybridization.
Day 5, Date: 21-05-2021 TOPIC: Protein-Protein interactions- Phage display,
Day 6, Date: 22-05-2021 TOPIC: Yeast two hybrid system, Yeast three hybrid system.
Week 04 TOPIC-Nucleic Acid Sequencing
Day 1, Date: 24-05-2021 TOPIC: DNA Sequencing- Dideoxyribonucleotide, Chemical degadation
Day 2, Date: 25-05-2021 TOPIC: Automated DNA sequencing, Thermal cycle sequencing
Day 3, Date: 26-05-2021 TOPIC: Pyrosequencing, Concept of PCR

Day 4, Date: 27-05-2021 TOPIC: Basic PCR reaction, Factors affecting the PCR, Applications of PCR
Day 5, Date: 28-05-2021 TOPIC: Types of PCR (RT PCR, Real time PCR)
Day 6, Date: 29-05-2021 TOPIC: Allele specific PCR, Multiplex PCR
Week 05
Day 1, Date: 31-05-2021 TOPIC: Doubt Class
Week 01 TOPIC-Site Directed Mutagenesis
Day 2, Date: 01-06-2021 TOPIC: Oligonucleotide directed mutagenesis, PCR amplified oligonucleotide directed mutagenesis
Day 3, Date: 02-06-2021 TOPIC: Random mutagenesis with degenerate oligonucleotide primers / nucleotide analogs
Day 4, Date: 03-06-2021 TOPIC: Gene expression and Regulation studies- Primer extension, S1 mapping, RNase protection assay
Day 5, Date: 04-06-2021 TOPIC: Gel retardation assay, Deletion analysis, Reporter genes, DNA foot printing
Day 6, Date: 05-06-2021 TOPIC: Modification interference assays, HRT, HART
Week 02 TOPIC-Manipulation of gene expression in prokaryotes
Day 1, Date: 07-06-2021 TOPIC: Problems with production of recombinant proteins in <i>E coli</i>
Day 2, Date: 08-06-2021 TOPIC: Optimizing expression of foreign genes in <i>E.coli</i> - Strong and regulatory promoters
Day 3, Date: 09-06-2021 TOPIC: Codon usage, Fusion proteins
Day 4, Date: 10-06-2021 TOPIC: Increasing protein stability and secretion
Day 5, Date: 11-06-2021 TOPIC: Translation expression vectors, Protease deficient host strains
Day 6, Date: 12-06-2021 TOPIC: Doubt Class
Week 03
Day 1, Date: 14-06-2021 TOPIC: Heterologous protein production in Eukaryotes- <i>Saccharomyces cerevisiae</i> expression systems
Day 2, Date: 15-06-2021 TOPIC: - <i>Saccharomyces cerevisiae</i> expression systems
Day 3, Date: 16-06-2021 TOPIC: <i>Pistia pastoris</i> expression systems
Day 4, Date: 17-06-2021

TOPIC: <i>Pistia pastoris</i> expression systems
Day 5, Date: 18-06-2021 (TEST) TOPIC: Site Directed Mutagenesis
Day 6, Date: 19-06-2021 TOPIC: Doubt Class
Week 04
Day 1, Date: -21-06-2021 TOPIC: Baculovirus Insect cell expression systems
Day 2, Date: 22-06-2021 TOPIC: Mammalian cell expression system
Day 3, Date: 23-06-2021(TEST) TOPIC: Types of cloning vectors
Day 4, Date: 24-06-2021 TOPIC: Doubt Class
Day 6, Date: 26-06-2021(TEST) TOPIC: DNA Sequencing

Name of the Teacher – Ms. Ritu
Subject- Animal Tissue Culture
Paper- BT-109 (B)
Class- M.Sc. I

Week 04
Day 1, Date: 19-04-2021 TOPIC: Animal cell and tissues culture: Historical background, development
Day 2, Date: 20-04-2021 TOPIC: advantages and limitations of cell & tissue culture.
Week 05
Day 1, Date: 26-04-2021 TOPIC: Requirements of cell & tissue culture: aseptic area, incubation, preparation
Day 2, Date: 27-04-2021 TOPIC: sterilization, storage, specialized equipment, consumable items
Day 3, Date: 28-04-2021 TOPIC: TEST
Week 01
Day 1, Date: 03-05-2021 TOPIC: Aseptic techniques: elements of aseptic environment
Day 2, Date: 04-05-2021 TOPIC: sterile handling, laminar flow, standard procedure
Day 3, Date: 05-05-2021 TOPIC: Culture vessels and substrates: the substrate

Week 02
Day 1, Date: 10-05-2021 TOPIC: choice of culture vessel, treated surfaces
Day 2, Date: 11-05-2021 TOPIC: TEST
Day 3, Date: 12-05-2021 TOPIC: Defined media and supplements: physicochemical properties, balanced salt solutions
Week 03
Day 1, Date: 17-05-2021 TOPIC: complete media, role of serum and supplements, serum free media: advantages and disadvantages of serum and serum free media
Day 2, Date: 18-05-2021 TOPIC: replacement of serum, development of serum free media
Day 3, Date: 19-05-2021 TOPIC: TEST
Week 04
Day 1, Date: 24-05-2021 TOPIC: Primary culture: types of primary cell culture, isolation of the tissue, primary culture
Day 2, Date: 25-05-2021 TOPIC: Sub-culturing of animal cells: Subculture and propagation, Criteria for subculture,
Day 3, Date: 26-05-2021 TOPIC: Subculture of monolayer cells, growth cycle and split ratio
Week 05
Day 1, Date: 31-05-2021 TOPIC: propagation and subculture in suspension
Week 01
Day 2, Date: 01-06-2021 TOPIC: TEST
Day 3, Date: 02-06-2021 TOPIC: Cloning and selection: dilution and suspension cloning, scaling up in suspension
Week 02
Day 1, Date: 07-06-2021 TOPIC: monolayer, large scale production of cells using bioreactors, microcarriers and perfusion techniques.
Day 2, Date: 08-06-2021 TOPIC: TEST
Day 3, Date: 09-06-2021 TOPIC: Cell line characterization: need for characterization, authentication, cell morphology, chromosome content,

Week 03
Day 1, Date: 14-06-2021 TOPIC: DNA content, RNA and protein expression, enzyme activity, antigen markers.
Day 2, Date: 15-06-2021 TOPIC: Production of high value therapeutics: enzymes, hormones, monoclonal antibody, cytokines, tissue plasminogen activators.
Day 3, Date: 16-06-2021 TOPIC: TEST
Week 04
Day 1, Date: 21-06-2021 TOPIC: Applications of animal cell culture: virology, cancer research, gene therapy, drug development and cytotoxicity,
Day 2, Date: 22-06-2021 TOPIC: animal cloning, genetic counseling, cryopreservation of cells.
Day 3, Date: 23-06-2021 TOPIC: REVISION AND DISCUSSION

Name of the Teacher – Ms. Ritu

Subject- Plant Tissue Culture

Paper- BT-109 (B)

Class- M.Sc. I

Week 04
Day 4, Date: 22-04-2021 TOPIC: Introduction to plant cell and tissue culture and historical perspective. Laboratory organization,
Day 5, Date: 23-04-2021 TOPIC: aseptic manipulations and culture media – composition, preparation and development
Day 6, Date: 24-04-2021 TOPIC: Callus culture; Initiation and maintenance of suspension culture- batch and continuous culture
Week 05
Day 4, Date: 29-04-2021 TOPIC: assessment of growth and viability
Day 6, Date: 01-05-2021 TOPIC: Static techniques of single cell culture. Organogenesis
Week 01
Day 4, Date: 06-05-2021 TOPIC: somatic embryogenesis and synthetic seeds
Day 5, Date: 07-05-2021

TOPIC: Micropropagation – technique
Day 6, Date: 08-05-2021 TOPIC: factors affecting <i>in vitro</i> culture of plants (physical, chemical, genotypic and others)
Week 02
Day 4, Date: 13-05-2021 TOPIC: applications and limitations of micropropagation
Day 6, Date: 15-05-2021 TOPIC: Doubt Class
Week 03
Day 4, Date: 20-05-2021 TOPIC: Meristem, shoot tip culture and production of virus free plants.
Day 5, Date: 21-05-2021 TOPIC: Somaclonal variations
Day 6, Date: 22-05-2021 TOPIC: molecular basis of variation and their significance in plant breeding
Week 04
Day 4, Date: 27-05-2021 TOPIC: <i>In vitro</i> production of haploid plants – Androgenesis (anther and pollen culture)
Day 5, Date: 28-05-2021 TOPIC: Gynogenesis (ovary and ovule culture).
Day 6, Date: 29-05-2021 TOPIC: Doubt Class
Week 05
Day 1, Date: 31-05-2021 TOPIC: Significance and uses of haploids in Agriculture
Week 01
Day 4, Date: 03-06-2021 TOPIC: Wide hybridization and embryo rescue technique.
Day 5, Date: 04-06-2021 TOPIC: Protoplast culture and somatic hybridization – Isolation
Day 6, Date: 05-06-2021 TOPIC: culture and fusion of protoplast,
Week 02
Day 4, Date: 10-06-2021 TOPIC: selection of fusion products and plant regeneration
Day 5, Date: 11-06-2021 TOPIC: assessment of somatic hybrid plants,
Day 6, Date: 12-06-2021 TOPIC: Doubt Class
Week 03
Day 4, Date: 17-06-2021 TOPIC: production of cybrids,
Day 5, Date: 18-06-2021

TOPIC: applications of protoplast culture and somatic hybridization in the improvement of crop plants
Day 6, Date: 19-06-2021 TOPIC: Doubt Class
Week 04
Day 4, Date: 24-06-2021 TOPIC: <i>In vitro</i> germplasm conservation and cryopreservation
Day 6, Date: 26-06-2021 TOPIC: Doubt Class

Name of the Teacher – Ms. Kajal Sahni

Subject- Enzymology

Paper- BT-110

Class- M.Sc. I

Week 03
Day 4, Date: 15-04-2021 Topic: History of enzymology, advantages of enzymes over chemical catalysts,
Day 5, Date: 16-04-2021 Topic: Nomenclature and classification of enzymes
Day 6, Date: 17-04-2021 TOPIC: Determination of three dimensional structure of enzyme by X-ray crystallography
Week 04
Day 1, Date: 19-04-2021 TOPIC: Determination of three dimensional structure of enzyme by NMR spectrometry,
Day 2, Date: 20-04-2021 TOPIC: importance of 3-D structure of an enzyme
Day 4, Date: 22-04-2021 TOPIC: Classification of enzyme structures, structures adopted by enzymes,
Day 5, Date: 23-04-2021 TOPIC: principles that govern the 3-D structure adopted by enzymes; Forces for stability of 3-D structure;
Day 6, Date: 24-04-2021 TOPIC: Denaturation and renaturation
Week 05
Day 1, Date: 26-04-2021 TOPIC: TEST
Day 2, Date: 27-04-2021 TOPIC: Isoenzymes, enzyme specificity, monomeric and oligomeric enzymes, multienzyme complex
Day 2, Date: 28-04-2021

TOPIC: holoenzyme, apo-enzyme, cofactor, coenzyme, prosthetic group; enzyme activity
Day 4, Date: 29-04-2021 TOPIC: unit, turn over number and specific activity,
Day 5, Date: 30-04-2021 TOPIC: Ribozymes and Abzymes – A brief account
Day 6, Date: 01-05-2021 TOPIC: TEST
Week 01
Day 1, Date: 03-05-2021 TOPIC: Enzyme action; effect of enzyme on the rate and equilibrium of a reaction
Day 2, Date: 04-05-2021 TOPIC: principles that explain catalytic power and substrate specificity of enzymes; enzyme substrate complex
Day 3, Date: 05-05-2021 TOPIC: factors responsible for catalytic efficiency of enzyme;
Day 4, Date: 06-05-2021 TOPIC: proximity and orientation effect, acid-base catalysis, covalent catalysis, strain and distortion theory;
Day 5, Date: 07-05-2021 TOPIC: TEST
Day 6, Date: 08-05-2021 TOPIC: Nature of active site, identification of functional groups at active sites; regulatory enzymes
Week 02
Day 1, Date: 10-05-2021 TOPIC: covalently modulated enzymes, allosteric enzymes and their mode of action
Day 2, Date: 11-05-2021 TOPIC: regulation of enzyme activity in the living system.
Day 3, Date: 12-05-2021 TOPIC: An introduction to enzyme kinetics and its importance, Methods used for investigating the kinetics of enzyme catalyzed reactions;
Day 4, Date: 13-05-2021 TOPIC: factors affecting the velocity of enzyme catalysed reaction;
Day 6, Date: 15-05-2021 TOPIC: Michaelis-Menten equation, V_{max} , K_m and its significance;
Week 03
Day 1, Date: 17-05-2021 TOPIC: Lineweaver Burk plot- its advantages and limitations
Day 2, Date: 18-05-2021 TOPIC: Eadie- Hofstee and Hanes plots;

Day 3, Date: 19-05-2021 TOPIC: TEST
Day 4, Date: 20-05-2021 TOPIC: Enzyme inhibition, types of enzyme inhibitions- competitive, uncompetitive, noncompetitive
Day 5, Date: 21-05-2021 TOPIC: enzyme mixed type inhibition and determination of K_i , feedback inhibition;
Day 6, Date: 22-05-2021 TOPIC: Bisubstrate reactions- brief introduction to sequential and pingpong mechanism with examples
Week 04
Day 1, Date: 24-05-2021 TOPIC: Bisubstrate reactions- brief introduction to sequential and pingpong mechanism with examples
Day 2, Date: 25-05-2021 TOPIC: TEST
Day 3, Date: 26-05-2021 TOPIC: Strategies used for enzyme production, isolation and purification
Day 4, Date: 27-05-2021 TOPIC: method of calculating the purification fold;
Day 5, Date: 28-05-2021 TOPIC: estimation of enzyme activity
Day 6, Date: 29-05-2021 TOPIC: characterization of an enzyme
Week 05
Day 1, Date: 31-05-2021 TOPIC: criteria of enzyme purity
Week 01
Day 2, Date: 01-06-2021 TOPIC: TEST
Day 3, Date: 02-06-2021 TOPIC: determination of the molecular weight (M_r)
Day 4, Date: 03-06-2021 TOPIC: the number of sub-units of an enzyme
Day 5, Date: 04-06-2021 TOPIC: enzyme immobilization and its importance
Day 6, Date: 05-06-2021 TOPIC: protein engineering
Week 02
Day 1, Date: 07-06-2021

TOPIC: TEST
Day 2, Date: 08-06-2021 TOPIC: enzyme therapy, enzyme inhibitors
Day 3, Date: 09-06-2021 TOPIC: drug design
Day 4, Date: 10-06-2021 TOPIC: enzymes as biosensors
Day 5, Date: 11-06-2021 TOPIC: enzyme reactors
Day 6, Date: 12-06-2021 TOPIC: Applications of enzymes in medicine, textile, leather, detergent, paper
Week 03
Day 1, Date: 14-06-2021 TOPIC: TEST
Day 2, Date: 15-06-2021 TOPIC: Applications of enzymes in bakery, dairy industry, beverage
Day 3, Date: 16-06-2021 TOPIC: Applications of enzymes in fruit processing, food processing
Day 4, Date: 17-06-2021 TOPIC: Applications of enzymes in enzyme estimation
Day 5, Date: 18-06-2021 TOPIC: Applications of enzymes in enzyme estimation
Day 6, Date: 19-06-2021 TOPIC: TEST
Week 04
Day 1, Date: 21-06-2021 TOPIC: TEST
Day 2, Date: 22-06-2021 TOPIC: TEST
Day 3, Date: 23-06-2021 TOPIC: REVISION AND DISCUSSION
Day 5, Date: 25-06-2021 TOPIC: REVISION AND DISCUSSION
Day 6, Date: 26-06-2021 TOPIC: REVISION AND DISCUSSION

Name of the Teacher – Ms. Ritu
Subject- Environmental Biotechnology
Paper- BT-120
Class- M.Sc. II

Week 03
Day 4, Date: 15-04-2021 Topic: An overview, concept, scope and market Biological control of air pollution.
Day 5, Date: 16-04-2021 Topic: Bacterial examination of water for potability
Day 6, Date: 17-04-2021 TOPIC: Bacterial examination of water for potability
Week 04
Day 1, Date: 19-04-2021 TOPIC: Testing of water for physiochemical parameters including BOD
Day 2, Date: 20-04-2021 TOPIC: Testing of water for physiochemical parameters including COD.
Day 4, Date:22-04-2021 TOPIC: Solid waste : Sources and management (composting)
Day 5, Date: 23-04-2021 TOPIC: Solid waste : Sources and management (wormicomposting)
Day 6, Date: 24-04-2021 TOPIC: Solid waste : Sources and management (methane production).
Week 05
Day 1, Date: 26-04-2021 TOPIC: TEST
Day 2, Date: 27-04-2021 TOPIC: Waste water : origin, composition and treatment.
Day 2, Date: 28-04-2021 TOPIC: Physical, chemical and biological treatment of waste water
Day 4, Date: 29-04-2021 TOPIC: Aerobic processes : activated sludge, oxidation ponds
Day 5, Date: 30-04-2021 TOPIC: Aerobic processes : trickling filter towers, and rotating discs
Day 6, Date: 01-05-2021 TOPIC: TEST
Week 01
Day 1, Date: 03-05-2021 TOPIC: Anaerobic processes: anaerobic digesters
Day 2, Date: 04-05-2021 TOPIC: anaerobic filters and upflow sludge blanket reactors
Day 3, Date: 05-05-2021 TOPIC: Microbiology and biochemistry of aerobic and anaerobic waste water treatment processes.
Day 4, Date: 06-05-2021

TOPIC: Microbiology and biochemistry of aerobic and anaerobic waste water treatment processes.
Day 5, Date: 07-05-2021 TOPIC: TEST
Day 6, Date: 08-05-2021 TOPIC: Treatment of industrial effluents: distillery effluent, paper and pulp mill effluent
Week 02
Day 1, Date: 10-05-2021 TOPIC: Treatment of industrial effluents: tannary effluent, textile dye effluent
Day 2, Date: 11-05-2021 TOPIC: regulation of enzyme activity in the living system.
Day 3, Date: 12-05-2021 TOPIC: removal of heavy metals from waste waters
Day 4, Date: 13-05-2021 TOPIC: TEST
Day 6, Date: 15-05-2021 TOPIC: Bioremediation of fuel oils and lubricants in soil and water
Week 03
Day 1, Date: 17-05-2021 TOPIC: Bioremediation of fuel oils and lubricants in soil and water
Day 2, Date: 18-05-2021 TOPIC: Degradation of sulphur compounds present in coal and petroleum
Day 3, Date: 19-05-2021 TOPIC: Degradation of sulphur compounds present in coal and petroleum
Day 4, Date: 20-05-2021 TOPIC: TEST
Day 5, Date: 21-05-2021 TOPIC: Microbial degradation of xenobiotics
Day 6, Date: 22-05-2021 TOPIC: genetic engineering of biodegradation pathways
Week 04
Day 1, Date: 24-05-2021 TOPIC: TEST
Day 2, Date: 25-05-2021 TOPIC: Environmental Monitoring: Biosensors for environmental applications
Day 3, Date: 26-05-2021 TOPIC: BOD sensor, ammonia sensor
Day 4, Date: 27-05-2021 TOPIC: Nitrite sensor and sulphite ion sensor.
Day 5, Date: 28-05-2021

TOPIC: TEST
Day 6, Date: 29-05-2021 TOPIC: Indicator organisms: Safety indicators
Week 05
Day 1, Date: 31-05-2021 TOPIC: Indicator organisms: Quality indicators
Week 01
Day 2, Date: 01-06-2021 TOPIC: TEST
Day 3, Date: 02-06-2021 TOPIC: Microbial Insecticides : Bacteria, fungi
Day 4, Date: 03-06-2021 TOPIC: Microbial Insecticides : viruses
Day 5, Date: 04-06-2021 TOPIC: Use of R-DNA technology to enhance the efficacy microbial insecticides.
Day 6, Date: 05-06-2021 TOPIC: Use of R-DNA technology to enhance the efficacy microbial insecticides.
Week 02
Day 1, Date: 07-06-2021 TOPIC: TEST
Day 2, Date: 08-06-2021 TOPIC: Biofertilizers
Day 3, Date: 09-06-2021 TOPIC: Biofertilizers
Day 4, Date: 10-06-2021 TOPIC: TEST
Day 5, Date: 11-06-2021 TOPIC: Microbes in oil recovery and bioleaching
Day 6, Date: 12-06-2021 TOPIC: Microbes in oil recovery and bioleaching
Week 03
Day 1, Date: 14-06-2021 TOPIC: TEST
Day 2, Date: 15-06-2021 TOPIC: Biodeterioration of stored plant food materials, leather, wool and related building
Day 3, Date: 16-06-2021 TOPIC: Biodeterioration of metals, textiles, stone & related building
Day 4, Date: 17-06-2021 TOPIC: TEST
Day 5, Date: 18-06-2021

TOPIC: Control of microbial bideterioration.
Day 6, Date: 19-06-2021 TOPIC: Control of microbial bideterioration.
Week 04
Day 1, Date: 21-06-2021 TOPIC: TEST
Day 2, Date: 22-06-2021 TOPIC: TEST
Day 3, Date: 23-06-2021 TOPIC: REVISION AND DISCUSSION
Day 5, Date: 25-06-2021 TOPIC: REVISION AND DISCUSSION
Day 6, Date: 26-06-2021 TOPIC: REVISION AND DISCUSSION

Name of the Teacher – Ms. Sonika
Subject- Animal Biotechnology
Paper- BT-121
Class- M.Sc. II

Week 03
Day 4, Date: 15-04-2021 Topic: Scope, global perspective and new horizons
Day 5, Date: 16-04-2021 Topic: Historical perspective, and economically important livestock breeds
Day 6, Date: 17-04-2021 TOPIC: Model animals in animal biotechnology and genetic engineering.
Week 04
Day 1, Date: 19-04-2021 TOPIC: Somatic Cell Genetics
Day 2, Date: 20-04-2021 TOPIC: Production of hybrid cells
Day 4, Date:22-04-2021 TOPIC: TEST
Day 5, Date: 23-04-2021 TOPIC: Properties of hybrids
Day 6, Date: 24-04-2021 TOPIC: Applications hybrid cells

Week 05
Day 1, Date: 26-04-2021 TOPIC: Selectable markers
Day 2, Date: 27-04-2021 TOPIC: Selectable markers
Day 2, Date: 28-04-2021 TOPIC: viral vectors for gene transfer into mammalian cells: SV40, adenovirus, vaccinia,
Day 4, Date: 29-04-2021 TOPIC: viral vectors for gene transfer into mammalian cells: bovine, papiloma virus,
Day 5, Date: 30-04-2021 TOPIC: viral vectors for gene transfer into mammalian cells: baculovirus, retrovirus
Day 6, Date: 01-05-2021 TOPIC: TEST
Week 01
Day 1, Date: 03-05-2021 TOPIC: Transgenic animals: Transgenic mice:
Day 2, Date: 04-05-2021 TOPIC: Methodology and applications;
Day 3, Date: 05-05-2021 TOPIC: Transgenic cattle
Day 4, Date: 06-05-2021 TOPIC: Livestock transgenesis- production of drugs using animals
Day 5, Date: 07-05-2021 TOPIC: TEST
Day 6, Date: 08-05-2021 TOPIC: Biotechnology in livestock assisted reproduction, biodiversity and conservation:
Week 02
Day 1, Date: 10-05-2021 TOPIC: Biotechnology in conservation of livestock diversity
Day 2, Date: 11-05-2021 TOPIC: Superovulation
Day 3, Date: 12-05-2021 TOPIC: Embryo biotechnology- Embryo collection
Day 4, Date: 13-05-2021 TOPIC: evaluation, and transfer, IVF and <i>in vitro</i> embryo production,
Day 6, Date: 15-05-2021 TOPIC: TEST
Week 03
Day 1, Date: 17-05-2021 TOPIC: Cryobanking of germplasm

Day 2, Date: 18-05-2021 TOPIC: oocytes and sperm
Day 3, Date: 19-05-2021 TOPIC: Somatic cell nuclear transfer,
Day 4, Date: 20-05-2021 TOPIC: Stem cells technology in livestock
Day 5, Date: 21-05-2021 TOPIC: TEST
Day 6, Date: 22-05-2021 TOPIC: Animal cloning: Concepts of animal cloning
Week 04
Day 1, Date: 24-05-2021 TOPIC: Principles and techniques of cloning
Day 2, Date: 25-05-2021 TOPIC: TEST
Day 3, Date: 26-05-2021 TOPIC: Applications of animal cloning.
Day 4, Date: 27-05-2021 TOPIC: TEST
Day 5, Date: 28-05-2021 TOPIC: Animal genomics: crucial role for health and biomedical sciences
Day 6, Date: 29-05-2021 TOPIC: Animal genomics: crucial role for health and biomedical sciences
Week 05
Day 1, Date: 31-05-2021 TOPIC: Models used in animal genomics.
Week 01
Day 2, Date: 01-06-2021 TOPIC: Models used in animal genomics.
Day 3, Date: 02-06-2021 TOPIC: TEST
Day 4, Date: 03-06-2021 TOPIC: Functional genomics and livestock traits assessment,
Day 5, Date: 04-06-2021 TOPIC: Functional genomics and livestock traits assessment,
Day 6, Date: 05-06-2021 TOPIC: Livestock in the post genomic era of biology and medicine
Week 02
Day 1, Date: 07-06-2021 TOPIC: Livestock in the post genomic era of biology and medicine

Day 2, Date: 08-06-2021 TOPIC: TEST
Day 3, Date: 09-06-2021 TOPIC: Gene Transfer into Animal Cells: DNA transfer techniques into mammalian cells
Day 4, Date: 10-06-2021 TOPIC: calcium phosphate precipitation
Day 5, Date: 11-06-2021 TOPIC: DEAE-dextran procedure
Day 6, Date: 12-06-2021 TOPIC: polycation DMSO
Week 03
Day 1, Date: 14-06-2021 TOPIC: microinjection
Day 2, Date: 15-06-2021 TOPIC: electroporation
Day 3, Date: 16-06-2021 TOPIC: TEST
Day 4, Date: 17-06-2021 TOPIC: TEST
Day 5, Date: 18-06-2021 TOPIC: TEST
Day 6, Date: 19-06-2021 TOPIC: REVISION AND DISCUSSION
Week 04
Day 1, Date: 21-06-2021 TOPIC: REVISION AND DISCUSSION
Day 2, Date: 22-06-2021 TOPIC: TEST
Day 3, Date: 23-06-2021 TOPIC: REVISION AND DISCUSSION
Day 5, Date: 25-06-2021 TOPIC: REVISION AND DISCUSSION
Day 6, Date: 26-06-2021 TOPIC: REVISION AND DISCUSSION

