

DISCIPLINE: BIOTECHNOLOGY	SEMESTER: 3RD	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Th-1) PHYSICAL CHEMISTRY	NO.OFDAYS/PER WEEK CLASSALLOTTED:4	FROM DATE: 01-08-2023 TO DATE: 30-10- 2023 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	1.1 Intermolecular forces in liquid.
	2 nd	Vapour pressure and its effect on temperature and boiling point.
	3 rd	Surface tension.
	4 th	Viscosity and measurement of viscosity by Ostwald method.
2 nd	1 st	Refractive index, specific refraction, determination of refractive index
	2 nd	Optical activity and measurement of optical activity.
	3 rd	Solve simple problems based on physical properties of liquid.
	4 th	2.1 Solution and Types of solutions
3 rd	1 st	Ways of expressing concentration.
	2 nd	Sol Solution and Types of solutions ve numerical related to concentration.
	3 rd	The solution of gases in gases.
	4 th	Henry's law and solve numerical related to it.
4 th	1 st	Solutions of liquid in liquids.
	2 nd	Solubility of partially miscible liquids
	3 rd	Solubility of solid in liquid and equilibrium concept, solubility curve.
	4 th	Raoult's Law, ideal solution and explain the lowering of vapour pressure and its measurement.
5 th	1 st	Concept of elevation of boiling point and depression of freezing point.
	2 nd	3.1 Osmosis and osmotic pressure with example.
	3 rd	Function of semi permeable membrane.
	4 th	Osmotic pressure and isotonic solutions.
6 th	1 st	The theories of Osmosis.
	2 nd	Reverse osmosis.
	3 rd	The laws of osmotic pressure.
	4 th	Solve the Simple Problems.
7 th	1 st	Relation between Vapour Pressure & Osmotic Pressure.
	2 nd	4.1 Nernst's distribution law.
	3 rd	Equilibrium constant from distribution coefficient.
	4 th	Extraction with a solvent, multiple extraction.
8 th	1 st	Concept of liquid-liquid chromatography.
	2 nd	Applications of distribution law.

	3 rd	Numerical based on distribution law.
	4 th	5.1 Colloids & types of colloidal systems.
9 th	1 st	Characteristics of sols.
	2 nd	The application of colloids.
	3 rd	Methods of preparation of sols
	4 th	purification of sols.
10 th	1 st	The optical, kinetic properties of sols.
	2 nd	electrical properties of sols.
	3 rd	Emulsion and types of emulsion
	4 th	The role of Emulsifier & their properties.
	1 st	The preparation of Emulsions
11 th	1 st	Gel, type of gel, properties and application
	2 nd	6.1 Adsorption
	3 rd	Compare absorption and adsorption
	4 th	Compare absorption and adsorption
12 th	1 st	Types of adsorption.
	2 nd	Types of adsorption.
	3 rd	Physical adsorption
	4 th	Physical adsorption
13 th	1 st	Chemisorption
	2 nd	Chemisorption
	3 rd	The application of adsorption
	4 th	The application of adsorption
14 th	1 st	The Ion- exchange adsorption
	2 nd	The Ion- exchange adsorption
	3 rd	Application of ion –exchange adsorption
	4 th	Application of ion –exchange adsorption
15 th	1 st	Doubt clearing session
	2 nd	revision
	3 rd	Class test
	4 th	Class test

DISCIPLINE: Biotechnology	SEMESTER: 3 rd	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: Th-2 Basic Life Science (Theory)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	FROM DATE: 01-08-23 TO DATE: 30-10-23 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	Introduction to Biology
	2 nd	Concept of Botany
	3 rd	Discovery of Cell
	4 th	Terms used in plant life
2 nd	1 st	Discovery of plant cell and its organs
	2 nd	Concept of Zoology
	3 rd	Discovery of animal cell and its organs
	4 th	Cell Theory
3 rd	1 st	Two kingdom system
	2 nd	Five kingdom Classification
	3 rd	Morphology and Anatomy
	4 th	Tissues
4 th	1 st	About animal tissue
	2 nd	About plant tissue
	3 rd	Anatomy of Plant tissue
	4 th	Anatomy of Animal tissue
5 th	1 st	Bio-nomial nomenclature
	2 nd	Morphology of flowering plants
	3 rd	Mendelian principle
	4 th	Continuity of Life
6 th	1 st	Mendel's laws of inheritance.
	2 nd	Monohybrid cross
	3 rd	Dihybrid cross
	4 th	Sex linked inheritance.
7 th	1 st	Sex determination
	2 nd	Test-1
	3 rd	Chromosomal abbreviation
	4 th	Chromosomal disorder
8 th	1 st	Nutrition
	2 nd	Photosynthesis.
	3 rd	About Chlorophyll pigment
	4 th	Chloroplast structure
9 th	1 st	Chloroplast function
	2 nd	Digestive system
	3 rd	Digestive enzymes
	4 th	Digestive glands
10 th	1 st	Process of digestion in human beings
	2 nd	Respiration
	3 rd	Cellular respiration.
	4 th	Structure and function of ATP
11 th	1 st	Concept of fermentation
	2 nd	Test 2
	3 rd	Transport
	4 th	Plant water relationship

12 th	1 st	Transport of water
	2 nd	Transport of minerals in plants
	3 rd	Fundamentals of transpiration.
	4 th	Circulation of blood in human body.
13 th	1 st	Different kind of minerals
	2 nd	Concept of fermentation
	3 rd	Osmosis
	4 th	ATP production
14 th	1 st	Calvin cycle
	2 nd	Kreb's cycle
	3 rd	Structure of mitochondria
	4 th	Blood grouping
15 th	1 st	T/A apparatus
	2 nd	Transpiration
	3 rd	Circulation in Plants
	4 th	Test 3

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3RD	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Th-3) Introduction to Biotechnology	NO.OFDAYS/PER WEEK CLASSALLOTTED:4	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	1.1Introduction of Biotechnology
	2 nd	History
	3 rd	Traditional biotechnology
	4 th	Fermentation technology
2 nd	1 st	Fermentation technology
	2 nd	modern biotechnology
	3 rd	r DNA technology
	4 th	Genetic engineering
3 rd	1 st	Different disciplinary of Biotechnology
	2 nd	Different disciplinary of Biotechnology
	3 rd	Applications of biotechnology
	4 th	Global impact of Biotechnology.
4 th	1 st	Genes and genetics
	2 nd	Basic concept of DNA
	3 rd	Watson and crick model of DNA
	4 th	Chemical composition of DNA
5 th	1 st	Chemical composition of DNA
	2 nd	PCR technology
	3 rd	PCR technology
	4 th	Structure of RNA
6 th	1 st	Structure of RNA
	2 nd	Chemical composition
	3 rd	Chemical composition
	4 th	Genes
7 th	1 st	Genome.
	2 nd	Genome.
	3 rd	Environmental biotechnology
	4 th	Bioremediation
8 th	1 st	Xenobiotics
	2 nd	Xenobiotics
	3 rd	Bioaugmentation
	4 th	Bioaugmentation
9 th	1 st	Vermi -composting

	2 nd	Vermi composting
	3 rd	Microbial Leaching
	4 th	Microbial Leaching
10 th	1 st	Animal biotechnology
	2 nd	Main terminology in cell culture
	3 rd	Main terminology in cell culture
	4 th	Minimal requirements for animal cell culture
11 th	1 st	Minimal requirements for animal cell culture
	2 nd	Media composition of animal cell culture
	3 rd	Media composition of animal cell culture
	4 th	Some examples of transgenic animals (like Dolly)
12 th	1 st	Some examples of transgenic animals (like Dolly)
	2 nd	Some application of animal cell culture
	3 rd	Some application of animal cell culture
	4 th	discussion
13 th	1 st	Class test
	2 nd	Biotechnology & biosafety
	3 rd	Biosafety guideline and Regulations
	4 th	Biosafety guideline and Regulations
14 th	1 st	IPR and IPP
	2 nd	WIPO
	3 rd	WIPO
	4 th	Patenting of Biological materials
15 th	1 st	Patenting of Biological materials
	2 nd	Significance of patents in India
	3 rd	Significance of patents in India
	4 th	Revision and class test

DISCIPLINE: Biotechnology	SEMESTER: 3 rd Sem	NAME OF THE TEACHING FACULTY: Sunil Biswajit Maharana
SUBJECT: (Th-4) CELL AND MOLECULAR BIOLOGY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS:15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	What is cell.
	2 nd	What is Prokaryotic cells?
	3 rd	What is Eukaryotic cells?
	4 th	Difference between Prokaryotic and Eukaryotic cells
2 nd	1 st	Cell structure .
	2 nd	Cell functions.
	3 rd	What is Nucleus?
	4 th	. What is Nucleosome?
3 rd	1 st	What is Chromosome?
	2 nd	Chromosome types?
	3 rd	What is Cell cycle?
	4 th	phases of cell cycle
4 th	1 st	Processes of Cell cycle?
	2 nd	Processes of Cell cycle?
	3 rd	Phases of Mitosis .
	4 th	Phases of Meiosis.
5 th	1 st	Difference between Mitosis and Meiosis.
	2 nd	What is Cytoskeleton?
	3 rd	What is Actin ?
	4 th	What is Myosin?
6 st	1 st	What is DNA ?
	2 nd	Types of DNA Replication.
	3 rd	Enzymes of DNA Replication.
	4 th	Process of DNA Replication.
7 th	1 st	What is DNA Recombination?
	2 nd	Types of Recombination.
	3 rd	Process of Recombination
	4 th	Process of Recombination.
8 th	1 st	What is DNA Damage?
	2 nd	Cause and repair of DNA Damage.
	3 rd	Different Components of transcription machinery in prokaryotes.
	4 th	Different Components of transcription machinery in eukaryotes.
9 th	1 st	Different Transcription factors
	2 nd	Different Transcription factors
	3 rd	What is Transcription?
	4 th	Enzymes involved in Transcription.
10 th	1 st	Transcription process (Initiation, Elongation, and Termination).
	2 nd	Transcription process (Initiation, Elongation, and Termination).
	3 rd	What is m-RNA processing?
	4 th	Different steps involved in m-RNA processing
11 st	1 st	Pre transcriptional processing?
	2 nd	Post transcriptional processing?

	3 rd	Capping and poly (A) tailing
	4 th	m-RNA stability-RNA editing
12 th	1 st	Process of m-RNA stability-RNA editing
	2 nd	What is translation)
	3 rd	Genetic code &the principle of translation.
	4 th	Main Translation machinery (t-RNA, Aminoacyl synthetase, Ribosome),
13 th	1 st	Main Translation machinery (t-RNA, Aminoacyl synthetase, Ribosome),
	2 nd	Translation process (Initiation)Process
	3 rd	Translation process (Elongation) Process
	4 th	Translation process (Termination) Process
14 th	1 st	Post translational process.
	2 nd	Regulation of Gene Expression: Constitutive and Induced gene expression
	3 rd	Regulation of Gene Expression: Constitutive and Induced gene expression
	4 th	Regulation of Gene Expression: Constitutive and Induced gene expression
15 th	1 st	Regulation of gene expression in prokaryotes.
	2 nd	Regulation of gene expression in eukaryotes.
	3 rd	Operon model (Lac-operon)
	4 th	Operon model (Trp- operon)

Discipline: Biotechnology	Semester:3rd	Name of the Teaching Faculty: Sunil Biswajit Maharana
Subject:(TH-5) Environmental studies	No. of Days/per week class allotted: 4	From Date: 01-08-2023 To Date: 30-10-2023 No.of Weeks:15
Week	Class Day	Theory Topics
		UNIT 1:The Multidisciplinary nature of environmental studies
1st	1st	Definition & introduction of environment
	2nd	scope of environment
	3rd	importance of environment
	4th	Need for public awareness
2nd		UNIT 2:Natural Resources
	1st	Forest resources
	2nd	water resources
	3rd	Mineral & food Resources
3rd	4th	Energy & land Resources
	1st	Land Resources: Land resource
	2nd	land degradation, man induces land slides
	3rd	Soil erosion
4th	4th	desertification
	1st	Role of individual in conservation of natural resources.
	2nd	Equitable use of resources for sustainable life styles
		UNIT 3:SYSTEM
5th	3rd	Concept of an eco system.
	4th	Structure and function of an eco system.
	1st	Producers, consumers,
	2nd	decomposers & food chain
6th	3rd	Energy flow in the eco systems
	4th	Ecological succession.
	1st	Introduction, types, characteristic features, structure and function of the eco system
	2nd	Forest ecosystem, Aquatic eco systems
7th		UNIT 4:Biodiversity and it's Conservation
	3rd	Introduction-Definition: genetics, species
	4th	ecosystem diversity
	1st	Biogeographically classification of India.
8th	2nd	Value of biodiversity: consumptive use, productive use, social ethical
	4th	Biodiversity at global, national and local level.
	1st	Threats to biodiversity: Habitats loss,
8th	2nd	poaching of wild life, man wildlife conflicts.
		UNIT 5:Environmental Pollution:
	3rd	Air pollution.
	4th	water pollution.

9th	1st	soil pollution.
	2nd	marine pollution.
	3rd	noise pollution.
	4th	thermal pollution.
10th	1st	nuclear hazards
	2nd	Solid waste Management:Causes, effects
	3rd	control measures of urban and industrial wastes.
	4th	Role of an individual in prevention of pollution
11th	1st	Disaster management:flood,drought
	2nd	land slide,earth quake
		UNIT 6:Social issues and the Environment:
	3rd	Form unsustainable to sustainable development
	4th	Urban problems related to energy.
12th	1st	water shed management
	2nd	water conservation
	3rd	rain water haeversting
	4th	Resettlement and rehabilitation of people; its problems and concern.
13th	1st	Environmental ethics: issue and possible solutions
	2nd	Climate change, global warming, acid rain,
	3rd	ozone layer depletion, nuclear accidents and holocaust, case studies
		unit 7:Human population and the environment
	4th	water act,air act
14th	1st	public awareness
	2nd	Population growth and variation among nations.
	3rd	Population explosion- family welfare program
	4th	Environment and humanhealth.
15th	1st	Human rights
	2nd	value education
	3rd	Role of information technology in environment .
	4th	Role of information technology in human health.

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3RD	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Pr-1) PHYSICAL CHEMISTRY	NO.OF DAYS/PER WEEK CLASSALLOTTED:4	FROM DATE:01/08/2023 TO DATE: 30/10/2023 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	Exp.1 Preparation of standard solution of an acid and alkali
	2 nd	Demonstration
	3 rd	Preparation of standard solution of an acid
	4 th	Observation and discussion
2 nd	1 st	Preparation of standard solution of an alkali
	2 nd	Submission of record and observation
	3 rd	Exp.2 Determine the viscosity of a liquid by Red wood viscometer at different temperatures and plotting graph between viscosity and temperature
	4 th	Theory- viscosity, red wood viscometer
3 rd	1 st	Demonstration
	2 nd	Experimental work-observation and result
	3 rd	Observation writing and discussion
	4 th	Submission of Record
4 th	1 st	Exp.3 To determine the partition coefficient of iodine between water and carbon tetrachloride.
	2 nd	Theory- partition coefficient, calculation
	3 rd	Demonstration
	4 th	Experimental work
5 th	1 st	Result and discussion
	2 nd	Observation and record submission
	3 rd	Exp.4 To determine the partition coefficient of benzoic acid between water and benzene at room temperature and molecular state of Benzoic acid in benzene as compared to its solution in water.
	4 th	Theory- What is benzene ,Benzoic acid, molecular state of Benzoic acid.
6 th	1 st	Demonstration
	2 nd	Experimental work
	3 rd	Result and discussion
	4 th	observation and record submission
7 th	1 st	Exp.5 To prepare colloidal solution of starch.
	2 nd	What is colloidal solution?
	3 rd	What is starch?
	4 th	Demonstration

8 th	1 st	Observation and record
	2 nd	Submission of record
	3 rd	Exp.6 To prepare colloidal solution of egg albumin.
	4 th	Theory and principle
9 th	1 st	Demonstration
	2 nd	Experimental work
	3 rd	Repeat of practical work
	4 th	Record writing
10 th	1 st	Exp.7 Determine the solubility of a given salt at room temperature and also draw its solubility curve.
	2 nd	Theory and principle
	3 rd	What is solubility?
	4 th	Demonstration
	1 st	Result and discussion
11 th	1 st	Record submission
	2 nd	Exp.8 To determine the adsorption isotherm of acetic acid by activated charcoal.
	3 rd	Theory and principle
	4 th	What is adsorption isotherm?
12 th	1 st	Acetic acid and activated charcoal
	2 nd	Demonstration
	3 rd	Result and discussion
	4 th	Exp.9 To investigate the adsorption of oxalic acid from aqueous solution of activated charcoal and examines the validity of Freundlich and Langmuir's adsorption isotherm
13 th	1 st	Theory and principle
	2 nd	Langmuir's adsorption isotherm
	3 rd	Demonstration
	4 th	Result and observation
14 th	1 st	Record submission
	2 nd	Exp. 10 To determine the rate constant for hydrolysis of ethyl acetate catalysed by hydrochloric acid
	3 rd	Theory and principle
	4 th	Rate constant for Hydrolysis
15 th	1 st	Demonstration
	2 nd	Result and Discussion
	3 rd	Observation writing
	4 th	Record submission

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3 RD	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Pr-2) INTRODUCTION TO BIOTECHNOLOGY	NO.OFDAYS/PER WEEK CLASSALLOTTED:4	FROM DATE:01/08/2023 TO DATE: 30/10/2023 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	Exp.1 Observe Basic instrumentation in biotechnology
	2 nd	Theory and principle
	3 rd	Demonstration of basic instruments
	4 th	Observation writing
2 nd	1 st	Discussion
	2 nd	Record submission
	3 rd	Exp.2 To Conduct Protoplast isolation and fusion
	4 th	Theory and principle
3 rd	1 st	What is protoplast?
	2 nd	Protoplast isolation and fusion
	3 rd	Experimental work
	4 th	Observation and record submission
4 th	1 st	Exp.3 To Demonstrate Structure of DNA
	2 nd	Theory and principle
	3 rd	Brief explanation about DNA
	4 th	Demonstration
5 th	1 st	Observation and discussion
	2 nd	Record submission
	3 rd	Exp.4 To Isolate DNA from Plant cell
	4 th	Theory and principle
6 th	1 st	DNA of plant cell
	2 nd	Demonstration
	3 rd	Observation and result
	4 th	Record submission
7 th	1 st	Exp.5 To Quantify DNA by using spectrophotometer
	2 nd	Theory and principle
	3 rd	Spectrophotometer
	4 th	Calibration
8 th	1 st	Demonstration
	2 nd	Observation and record submission
	3 rd	Exp.6 Demonstrate PCR (Polymerase chain reaction)
	4 th	Theory and principle

9 th	1 st	Demonstration
	2 nd	Experimental work
	3 rd	Result and discussion
	4 th	Record submission
10 th	1 st	Exp.7 Demonstrate Different types of Centrifugation
	2 nd	Theory and principle
	3 rd	Centrifugation
	4 th	Demonstration
	1 st	Result and discussion
11 th	1 st	Record submission
	2 nd	Exp.8 To perform Cell immobilization by using sodium alginate and calcium chloride
	3 rd	Theory and principle
	4 th	What is cell immobilization?
12 th	1 st	Alginate and calcium
	2 nd	Demonstration
	3 rd	Result and discussion
	4 th	Exp.9 To Extract enzymes from milk
13 th	1 st	Theory and principle
	2 nd	What is enzyme?
	3 rd	Demonstration
	4 th	Result and observation
14 th	1 st	Record submission
	2 nd	Exp. 10 To analyze Enzyme kinetic of the given enzyme
	3 rd	Theory and principle
	4 th	Enzyme kinetic
15 th	1 st	Demonstration
	2 nd	Result and Discussion
	3 rd	Observation writing
	4 th	Record submission

DISCIPLINE: Biotechnology	SEMESTER: 3 rd Sem.	NAME OF THE TEACHING FACULTY: Sunil Biswajit Maharana
SUBJECT: (PR-3) Cell and Molecular Biology	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:05	FROM DATE: 01-08-2023 TO DATE: 30-10- 2023 NO. OF WEEKS:15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	Discussion about microscope and its parts.
	2 nd	Handling of Microscope
	3 rd	Preparation of slides
	4 th	Preparation of slides
	5 th	Preparation of slides
2 nd	1 st	Identification of slides
	2 nd	Identification of slides
	3 rd	Identification of slides
	4 th	Record writing and discussion.
	5 th	Record checking.
3 rd	1 st	Discussion about chromatography and instruments.
	2 nd	Collection of distil water
	3 rd	Collection of distil water
	4 th	Preparation of chemicals.
	5 th	Preparation of chemicals.
4 th	1 st	Experiment on chromatography.
	2 nd	Experiment on chromatography
	3 rd	Experiment on chromatography
	4 th	Record writing and discussion.
	5 th	Record checking.
5 th	1 st	Discussion about Mitosis and its process.
	2 nd	Discussion about Mitosis and its process.
	3 rd	Discussion about Mitosis and its process.
	4 th	Culture of onion
	5 th	Culture of onion
6 st	1 st	Preparation of slides of onion root tip
	2 nd	Preparation of slides of onion root tip
	3 rd	Preparation of slides of onion root tip
	4 th	Preparation of slides of onion root tip
	5 th	Identification of different stages.
7 th	1 st	Identification of different stages.
	2 nd	Identification of different stages.
	3 rd	Record writing and discussion.
	4 th	Record checking.
	5 th	Discussion about Meiosis and its process.
8 th	1 st	Discussion about Meiosis and its process.
	2 nd	Discussion about Meiosis and its process.
	3 rd	Culture of onion
	4 th	Culture of onion
	5 th	Preparation of slides of onion root tip
9 th	1 st	Preparation of slides of onion root tip
	2 nd	Identification of different stages.
	3 rd	Identification of different stages.
	4 th	Identification of different stages.
	5 th	Record writing and discussion.
10 th	1 st	Record checking.
	2 nd	Discussion about blood smear and its process.

	3 rd	Discussion about blood smear and its process.
	4 th	Preparation of chemicals.
	5 th	Preparation of chemicals.
11 st	1 st	Isolation of blood
	2 nd	Preparation of blood smears.
	3 rd	Record writing and discussion.
	4 th	Record checking.
	5 th	Discussion about blood constituents its process.
12 th	1 st	Discussion about blood constituents its process.
	2 nd	Isolation of blood
	3 rd	Separation of constituents from blood.
	4 th	Identification of constituents from blood.
	5 th	Record writing and discussion.
13 th	1 st	Record checking.
	2 nd	Discussion about bacteria and its isolation its process.
	3 rd	Preparation chemicals.
	4 th	Culture of Bacteria.
	5 th	Isolation of Bacterial DNA
14 th	1 st	Purity checking of DNA.
	2 nd	Record writing and discussion.
	3 rd	Record checking.
	4 th	Discussion about Plasmid and its isolation its process.
	5 th	Preparation chemicals.
15 th	1 st	Isolation of Plasmid DNA
	2 nd	Isolation of Plasmid DNA
	3 rd	Purity checking of DNA.
	4 th	Record writing and discussion.
	5 th	Record checking.

DISCIPLINE: Biotechnology	SEMESTER: 3rd Sem.	NAME OF THE TEACHING FACULTY: Sunil Biswajit Maharana
SUBJECT: Environmental Engg. Laboratory.	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04	FROM DATE: 01-08-2023 TO DATE: 30-10-2023 NO. OF WEEKS:15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	Discussion about water, its constituents and its purity.
	2 nd	Collection of water of from different area.
	3 rd	Preparation of distil water.
	4 th	Discussion about water dissolved Chlorine and its procedure.
2 nd	1 st	Experiment.
	2 nd	Experiment.
	3 rd	Experiment.
	4 th	Experiment.
3 rd	1 st	Record writing and discussion.
	2 nd	Record checking.
	3 rd	Discussion about water dissolved oxygen and Winkler' method procedure.
	4 th	Preparation of Chemicals
4 th	1 st	Preparation of Chemicals
	2 nd	Experiment.
	3 rd	Experiment.
	4 th	Experiment.
5 th	1 st	Experiment.
	2 nd	Record writing and discussion.
	3 rd	Record checking.
	4 th	Discussion about BOD of water.
6 st	1 st	Preparation of Chemicals
	2 nd	Preparation of Chemicals
	3 rd	Experiment.
	4 th	Experiment.
7 th	1 st	Experiment.
	2 nd	Experiment.
	3 rd	Record writing and discussion.
	4 th	Record checking.
8 th	1 st	Discussion about COD of water.
	2 nd	Preparation of Chemicals
	3 rd	Preparation of Chemicals
	4 th	Experiment.
9 th	1 st	Experiment.
	2 nd	Experiment.
	3 rd	Record writing and discussion.
	4 th	Record checking.
10 th	1 st	Discussion about turbidity of water.
	2 nd	Preparation of Chemicals
	3 rd	Preparation of Chemicals
	4 th	Experiment.
11 st	1 st	Experiment.
	2 nd	Record writing and discussion.
	3 rd	Record checking.
	4 th	Discussion about total dissolved solid of water and its procedure.
12 th	1 st	Preparation of Chemicals
	2 nd	Preparation of Chemicals

	3 rd	Experiment.
	4 th	Experiment.
13 th	1 st	Record writing and discussion.
	2 nd	Record checking.
	3 rd	Discussion about coagulant and its procedure.
	4 th	Preparation of Chemicals
14 th	1 st	Experiment.
	2 nd	Record writing and discussion.
	3 rd	Record checking.
	4 th	Discussion about Sulphate in water and its procedure.
15 th	1 st	Preparation of Chemicals
	2 nd	Experiment.
	3 rd	Record writing and discussion.
	4 th	Record checking.