Discipline: Biotechnology	Semester:3rd	Name of the Teaching Faculty: **Dr. Sasmita Panigrahi**
Subject:(TH-5) Environmental studies	No. of Days/per week class allotted: 4	From Date: 01-07-2024 To Date:08-11-2024 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
	4th	Energy & land Resources
3rd	1st	Land Resources: Land resource
	2nd	land degradation,man induces land slides
	3rd	Soil erosion
	4th	desertification
4th	1st	Role of individual in conservation of natural resources.
	2nd	Equitable use of resources for sustainable life styles
		UNIT 3:SYSTEM
	3rd	Concept of an eco system.
	4th	Structure and function of an eco system.
5th	1st	Producers, consumers,
	2nd	decomposers & food chain
	3rd	Energy flow in the eco systems
	4th	Ecological succession.
6th	1st	Introduction, types, characteristic features, structure and function of the eco system
	2nd	Forest ecosystem,Aquatic eco systems
		UNIT 4:Biodiversity and it's Conservation
	3rd	Introduction-Definition: genetics, species
	4th	ecosystem diversity
	1st	Biogeographically classification of India.

7th	2nd	Value of biodiversity: consumptive use,
	3rd	productive use, social ethical
	4th	Biodiversity at global, national and local level.
8th	1st	Threats to biodiversity: Habitats loss,
	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 haevesting
	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	NAMEOF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Pr-2) INTRODUCTION TO BIOTECHNOLOGY	NO.OFDAYS/PER WEEK CLASSALLOTED:4	FROM DATE:01/07/2024 TO DATE: 08/11/2024 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1st	1st	**EXP.1** Observe Basic instrumentation in biotechnology
	2nd	Theory and principle
	3rd	Demonstration of basic instruments
	4th	Observation writing
2nd	1st	Discussion
	2nd	Record submission
	3rd	**Exp.2** To Conduct Protoplast isolation and fusion
	4th	Theory and principle
3rd	1st	What is protoplast?
	2nd	Protoplast isolation and fusion
	3rd	Experimental work
	4th	Observation and record submission
4th	1st	**Exp.3** To Demonstrate Structure of DNA
	2nd	Theory and principle
	3rd	Brief explaination about DNA
	4th	Demonstration
5th	1st	Observation and discussion
	2nd	Record submission
	3rd	**Exp.4** To Isolate DNA from Plant cell
	4th	Theory and principle
6th	1st	DNA of plant cell
	2nd	Demonstration
	3rd	Observation and result
	4th	Record submission
7th	1st	**Exp.5** To Quantify DNA by using spectrophotometer
	2nd	Theory and principle
	3rd	Spectrophotometer
	4th	Calibration
8th	1st	Demonstration

	2nd	Observation and record submission
	3rd	**Exp.6** Demonstrate PCR (Polymerase chain reaction)
	4th	Theory and principle
9th	1st	Demonstration
	2nd	Experimental work
	3rd	Result and discussion
	4th	Record submission
10th	1st	**Exp.7** Demonstrate Different types of Centrifugation
	2nd	Theory and principle
	3rd	Centrifugation
	4th	Demonstration
	1st	Result and discussion
11th	1st	Record submission
	2nd	**Exp.8** To perform Cell immobilization by using sodium alginate and calcium chloride
	3rd	Theory and principle
	4th	What is cell immobilization?
12th	1st	Alginate and calcium
	2nd	Demonstration
	3rd	Result and discussion
	4th	Exp.9 To Extract enzymes from milk
13th	1st	Theory and principle
	2nd	What is enzyme?
	3rd	Demonstration
	4th	Result and observation
14th	1st	Record submission
	2nd	**Exp. 10** To analyze Enzyme kinetic of the given enzyme
	3rd	Theory and principle
	4th	Enzyme kinetic
15th	1st	Demonstration
	2nd	Result and Discussion
	3rd	Observation writing
	4th	Record submission

DISCIPLINE: BIOTECHNOLOGY	SEMESTER: 3RD	NAMEOF THE TEACHING FACULTY: SIBASIS MAHAPATRA
SUBJECT: (Th-1) PHYSICAL CHEMISTRY	NO.OFDAYS/PER WEEK CLASSALLOTED:4	FROM DATE: 01-07-2024 TO DATE: 08-11-2024 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1st	1st	1.1Intermolecular forces in liquid.
	2nd	Vapour pressure and its effect on temperature and boiling point.
	3rd	Surface tension.
	4th	Viscosity and measurement of viscosity by Ostwald method.
2nd	1st	Refractive index, specific refraction, determination of refractive index
	2nd	Optical activity and measurement of optical activity.
	3rd	Solve simple problems based on physical properties of liquid.
	4th	2.1Solution and Types of solutions
3rd	1st	Ways of expressing concentration.
	2nd	Sol Solution and Types of solutions ve numerical related to concentration.
	3rd	The solution of gases in gases.
	4th	Henry's law and solve numerical related to it.
4th	1st	Solutions of liquid in liquids.
	2nd	Solubility of partially miscible liquids
	3rd	Solubility of solid in liquid and equilibrium concept, solubility curve.
	4th	Raoult's Law, ideal solution and explain the lowering of vapour pressure and its measurement.
5th	1st	Concept of elevation of boiling point and depression of freezing point.
	2nd	3.1Osmosis and osmotic pressure with example.
	3rd	Function of semi permeable membrane.
	4th	Osmotic pressure and isotonic solutions.
6th	1st	The theories of Osmosis.
	2nd	Reverse osmosis.
	3rd	The laws of osmotic pressure.
	4th	Solve the Simple Problems.

7th	1st	Relation between Vapour Pressure & Osmotic Pressure.
	2nd	4.1Nernst's distribution law.
	3rd	Equilibrium constant from distribution coefficient.
	4th	Extraction with a solvent, multiple extraction.
8th	1st	Concept of liquid-liquid chromatography.
	2nd	Applications of distribution law.
	3rd	Numerical based on distribution law.
	4th	5.1Colloids & types of colloidal systems.
9th	1st	Characteristics of sols.
	2nd	The application of colloids.
	3rd	Methods of preparation of sols
	4th	purification of sols.
10th	1st	The optical, kinetic properties of sols.
	2nd	electrical properties of sols.
	3rd	Emulsion and types of emulsion
	4th	The role of Emulsifier & their properties.
	1st	The preparation of Emulsions
11th	1st	Gel, type of gel, properties and application
	2nd	6.1 Adsorption
	3rd	Compare absorption and adsorption
	4th	Compare absorption and adsorption
12th	1st	Types of adsorption.
	2nd	Types of adsorption.
	3rd	Physical adsorption
	4th	Physical adsorption
13th	1st	Chemisorption
	2nd	Chemisorption
	3rd	The application of adsorption
	4th	The application of adsorption
14th	1st	The Ion- exchange adsorption
	2nd	The Ion- exchange adsorption
	3rd	Aplplication of ion –exchange adsorption
	4th	Aplplication of ion –exchange adsorption
15th	1st	Doubt clearing session
	2nd	revision
	3rd	Class test
	4th	Class test

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3RD	NAMEOF THE TEACHING FACULTY: SIBASIS MAHAPATRA SUNIL BISWAJIT MAHARANA
SUBJECT: (Pr-1) PHYSICAL CHEMISTRY	NO.OF DAYS/PER WEEK CLASSALLOTED:4	FROM DATE:01/07/2024 TO DATE: 08/11/2024 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1st	1st	Exp.1 Preparation of standard solution of an acid and alkali
	2nd	Demonstration
	3rd	Preparation of standard solution of an acid
	4th	Observation and discussion
2nd	1st	Preparation of standard solution of an alkali
	2nd	Submission of record and observation
	3rd	Exp.2 Determine the viscosity of a liquid by Red wood viscometer at different temperatures and plotting graph between viscosity and temperature
	4th	Theory- viscosity, red wood viscometer
3rd	1st	Demonstration
	2nd	Experimental work-observation and result
	3rd	Observation writing and discussion
	4th	Submission of Record
4th	1st	Exp.3 To determine the partition coefficient of iodine between water and carbon tetrachloride.
	2nd	Theory- partition coefficient, calculation
	3rd	Demonstration
	4th	Experimental work
5th	1st	Result and discussion
	2nd	Observation and record submission
	3rd	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.
	4th	Theory- What is benzene ,Benzoic acid, molecular state of Benzoic acid.
6th	1st	Demonstration
	2nd	Experimantal work
	3rd	Result and discussion
	4th	observation and record submission

7th	1st	Exp.5 To prepare colloidal solution of starch.
	2nd	What is colloidal solution?
	3rd	What is starch?
	4th	Demonstarion
8th	1st	Observation and record
	2nd	Submission of record
	3rd	Exp.6 To prepare colloidal solution of egg albumin.
	4th	Theory and principle
9th	1st	Demonstration
	2nd	Experimental work
	3rd	Repeat of practical work
	4th	Record writing
10th	1st	Exp.7 Determine the solubility of a given salt at room temperature and also draw its solubility curve.
	2nd	Theory and principle
	3rd	What is solubility?
	4th	Demonstration
	1st	Result and discussion
11th	1st	Record submission
	2nd	Exp.8 To determine the adsorption isotherm of acetic acid by activated charcoal.
	3rd	Theory and principle
	4th	What is adsorption isotherm?
12th	1st	Acetic acid and activated charcoal
	2nd	Demonstration
	3rd	Result and discussion
	4th	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
13th	1st	Theory and principle
	2nd	Langmuir's adsorption isotherm
	3rd	Demonstration
	4th	Result and observation
14th	1st	Record submission
	2nd	Exp. 10 To determine the rate constant for hydrolysis of ethyl acetate catalysed by hydrochloric acid
	3rd	Theory and principle
	4th	Rate constant for Hydrolysis
15th	1st	Demonstration
	2nd	Result and Discussion
	3rd	Observation writing
	4th	Record submission

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3RD	NAMEOF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Th-3) Introduction to Biotechnology	NO.OFDAYS/PER WEEK CLASSALLOTED:4	FROM DATE: 01-07-2024 TO DATE: 08-11-2024 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1st	1st	1.1Introduction of Biotechnology
	2nd	History
	3rd	Traditional biotechnology
	4th	Fermentation technology
2nd	1st	Fermentation technology
	2nd	modern biotechnology
	3rd	r DNA technology
	4th	Genetic engineering
3rd	1st	Different disciplinary of Biotechnology
	2nd	Different disciplinary of Biotechnology
	3rd	Applications of biotechnology
	4th	Global impact of Biotechnology.
4th	1st	Genes and genetics
	2nd	Basic concept of DNA
	3rd	Watson and crick model of DNA
	4th	Chemical composition of DNA
5th	1st	Chemical composition of DNA
	2nd	PCR technology
	3rd	PCR technology
	4th	Structure of RNA
6th	1st	Structure of RNA
	2nd	Chemical composition
	3rd	Chemical composition
	4th	Genes
7th	1st	Genome.
	2nd	Genome.
	3rd	Environmental biotechnology
	4th	Bioremediation
8th	1st	Xenobiotics
	2nd	Xenobiotics
	3rd	Bioagumentation
	4th	Bioagumentation

9th	1st	Vermi -composting
	2nd	Vermi composting
	3rd	Microbial Leaching
	4th	Microbial Leaching
10th	1st	Animal biotechnology
	2nd	Main terminology in cell culture
	3rd	Main terminology in cell culture
	4th	Minimal requirements for animal cell culture
11th	1st	Minimal requirements for animal cell culture
	2nd	Media composition of animal cell culture
	3rd	Media composition of animal cell culture
	4th	Some examples of transgenic animals (like Dolly)
12th	1st	Some examples of transgenic animals (like Dolly)
	2nd	Some application of animal cell culture
	3rd	Some application of animal cell culture
	4th	discussion
13th	1st	Class test
	2nd	Biotechnology & biosafety
	3rd	Biosafety guideline and Regulations
	4th	Biosafety guideline and Regulations
14th	1st	IPR and IPP
	2nd	WIPO
	3rd	WIPO
	4th	Patenting of Biological materials
15th	1st	Patenting of Biological materials
	2nd	Significance of patents in India
	3rd	Significance of patents in India
	4th	Revision and class test

DISCIPLINE: **Biotechnology**	**SEMESTER:** **3rd Sem.**	**NAME OF THE TEACHING FACULTY:** **Dr. Sasmita Panigrahi**
SUBJECT: **Environmental Engg. Laboratory.**	**NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04**	**FROM DATE: 01-07-2024** **TO DATE: 08-11-2024** **NO. OF WEEKS:15**
WEEK	**CLASS DAY**	**THEORY/ PRACTICAL TOPICS**
1st	1st	Discussion about water, its constituents and its purity.
	2nd	Collection of water of from different area.
	3rd	Preparation of distil water.
	4th	Discussion about water dissolved Chlorine and its procedure.
2nd	1st	Experiment.
	2nd	Experiment.
	3rd	Experiment.
	4th	Experiment.
3rd	1st	Record writing and discussion.
	2nd	Record checking.
	3rd	Discussion about water dissolved oxygen and Winkler' method procedure.
	4th	Preparation of Chemicals
4th	1st	Preparation of Chemicals
	2nd	Experiment.
	3rd	Experiment.
	4th	Experiment.
5th	1st	Experiment.
	2nd	Record writing and discussion.
	3rd	Record checking.
	4th	Discussion about BOD of water.
6st	1st	Preparation of Chemicals
	2nd	Preparation of Chemicals
	3rd	Experiment.
	4th	Experiment.
7th	1st	Experiment.
	2nd	Experiment.
	3rd	Record writing and discussion.
	4th	Record checking.
8th	1st	Discussion about COD of water.
	2nd	Preparation of Chemicals
	3rd	Preparation of Chemicals
	4th	Experiment.
9th	1st	Experiment.
	2nd	Experiment.
	3rd	Record writing and discussion.
	4th	Record checking.
10th	1st	Discussion about turbidity of water.
	2nd	Preparation of Chemicals
	3rd	Preparation of Chemicals
	4th	Experiment.
11st	1st	Experiment.
	2nd	Record writing and discussion.
	3rd	Record checking.
	4th	Discussion about total dissolved solid of water and its procedure.

12th	1st	Preparation of Chemicals
	2nd	Preparation of Chemicals
	3rd	Experiment.
	4th	Experiment.
13th	1st	Record writing and discussion.
	2nd	Record checking.
	3rd	Discussion about coagulant and its procedure.
	4th	Preparation of Chemicals
14th	1st	Experiment.
	2nd	Record writing and discussion.
	3rd	Record checking.
	4th	Discussion about Sulphate in water and its procedure.
15th	1st	Preparation of Chemicals
	2nd	Experiment.
	3rd	Record writing and discussion.
	4th	Record checking.

DISCIPLINE: Biotechnology	SEMESTER: 3rd 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: 01-07-2024 TO DATE: 08-11-2024 NO. OF WEEKS:15
WEEK	**CLASS DAY**	**THEORY/ PRACTICAL TOPICS**
1st	1st	Discussion about microscope and its parts.
	2nd	Handling of Microscope
	3rd	Preparation of slides
	4th	Preparation of slides
	5th	Preparation of slides
2nd	1st	Identification of slides
	2nd	Identification of slides
	3rd	Identification of slides
	4th	Record writing and discussion.
	5th	Record checking.
3rd	1st	Discussion about chromatography and instruments.
	2nd	Collection of distil water
	3rd	Collection of distil water
	4th	Preparation of chemicals.
	5th	Preparation of chemicals.
4th	1st	Experiment on chromatography.
	2nd	Experiment on chromatography
	3rd	Experiment on chromatography
	4th	Record writing and discussion.
	5th	Record checking.
5th	1st	Discussion about Mitosis and its process.
	2nd	Discussion about Mitosis and its process.
	3rd	Discussion about Mitosis and its process.
	4th	Culture of onion
	5th	Culture of onion
6st	1st	Preparation of slides of onion root tip
	2nd	Preparation of slides of onion root tip
	3rd	Preparation of slides of onion root tip
	4th	Preparation of slides of onion root tip
	5th	Identification of different stages.
7th	1st	Identification of different stages.
	2nd	Identification of different stages.
	3rd	Record writing and discussion.
	4th	Record checking.
	5th	Discussion about Meiosis and its process.
8th	1st	Discussion about Meiosis and its process.
	2nd	Discussion about Meiosis and its process.
	3rd	Culture of onion
	4th	Culture of onion
	5th	Preparation of slides of onion root tip
9th	1st	Preparation of slides of onion root tip
	2nd	Identification of different stages.
	3rd	Identification of different stages.
	4th	Identification of different stages.
	5th	Record writing and discussion.
10th	1st	Record checking.

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

DISCIPLINE: Biotechnology	**SEMESTER: 3rd 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: 01-07-2024 TO DATE: 08-11-2024 NO. OF WEEKS:15**
WEEK	**CLASS DAY**	**THEORY/ PRACTICAL TOPICS**
1st	1st	What is cell.
	2nd	What is Prokaryotic cells?
	3rd	What is Eukaryotic cells?
	4th	Difference between Prokaryotic and Eukaryotic cells
2nd	1st	Cell structure .
	2nd	Cell functions.
	3rd	What is Nucleus?
	4th	. What is Nucleosome?
3rd	1st	What is Chromosome?
	2nd	Chromosome types?
	3rd	What is Cell cycle?
	4th	phases of cell cycle
4th	1st	Processes of Cell cycle?
	2nd	Processes of Cell cycle?
	3rd	Phases of Mitosis .
	4th	Phases of Meiosis.
5th	1st	Difference between Mitosis and Meiosis.
	2nd	What is Cytoskeleton?
	3rd	What is Actin ?
	4th	What is Myosin?
6st	1st	What is DNA ?
	2nd	Types of DNA Replication.
	3rd	Enzymes of DNA Replication.
	4th	Process of DNA Replication.
7th	1st	What is DNA Recombination?
	2nd	Types of Recombination.
	3rd	Process of Recombination
	4th	Process of Recombination.
8th	1st	What is DNA Damage?
	2nd	Cause and repair of DNA Damage.
	3rd	Different Components of transcription machinery in prokaryotes.
	4th	Different Components of transcription machinery in eukaryotes.
9th	1st	Different Transcription factors
	2nd	Different Transcription factors
	3rd	What is Transcription?
	4th	Enzymes involved in Transcription.
10th	1st	Transcription process (Initiation, Elongation, and Termination).
	2nd	Transcription process (Initiation, Elongation, and Termination).
	3rd	What is m-RNA processing?
	4th	Different steps involved in m-RNA processing

11st	1st	Pre transcriptional processing?
	2nd	Post transcriptional processing?
	3rd	Capping and poly (A) tailing
	4th	m-RNA stability-RNA editing
12th	1st	Process of m-RNA stability-RNA editing
	2nd	What is translation)
	3rd	Genetic code &the principle of translation.
	4th	Main Translation machinery (t-RNA, Aminoacyl synthetase, Ribosome),
13th	1st	Main Translation machinery (t-RNA, Aminoacyl synthetase, Ribosome),
	2nd	Translation process (Initiation)Process
	3rd	Translation process (Elongation) Process
	4th	Translation process (Termination) Process
14th	1st	Post translational process.
	2nd	Regulation of Gene Expression: Constitutive and Induced gene expression
	3rd	Regulation of Gene Expression: Constitutive and Induced gene expression
	4th	Regulation of Gene Expression: Constitutive and Induced gene expression
15th	1st	Regulation of gene expression in prokaryotes.
	2nd	Regulation of gene expression in eukaryotes.
	3rd	Operon model (Lac-operon)
	4th	Operon model (Trp- operon)

DISCIPLINE: Biotechnology	**SEMESTER: 3rd**	**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: 01-07-2024 TO DATE: 08-11-2024 NO. OF WEEKS: 15**
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	Introduction to Biology
	2nd	Concept of Botany
	3rd	Discovery of Cell
	4th	Terms used in plant life
2nd	1st	Discovery of plant cell and its organs
	2nd	Concept of Zoology
	3rd	Discovery of animal cell and its organs
	4th	Cell Theory
3rd	1st	Two kingdom system
	2nd	Five kingdom Classification
	3rd	Morphology and Anatomy
	4th	Tissues
4th	1st	About animal tissue
	2nd	About plant tissue
	3rd	Anatomy of Plant tissue
	4th	Anatomy of Animal tissue
5th	1st	Bio-nomial nomenclature
	2nd	Morphology of flowering plants
	3rd	Mendelian principle
	4th	Continuity of Life
6th	1st	Mendel's laws of inheritance.
	2nd	Monohybrid cross
	3rd	Dihybrid cross
	4th	Sex linked inheritance.
7th	1st	Sex determination
	2nd	Test-1
	3rd	Chromosomal abbreviation
	4th	Chromosomal disorder
8th	1st	Nutrition
	2nd	Photosynthesis.
	3rd	About Chlorophyll pigment
	4th	Chloroplast structure
9th	1st	Chloroplast function
	2nd	Digestive system
	3rd	Digestive enzymes
	4th	Digestive glands
10th	1st	Process of digestion in human beings
	2nd	Respiration
	3rd	Cellular respiration.
	4th	Structure and function of ATP
11th	1st	Concept of fermentation
	2nd	Test 2
	3rd	Transport
	4th	Plant water relationship

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