

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: 01-10-21 TO DATE: 08-01-22 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: Biotech	SEMESTER: 4th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: Immunology (Practical)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 03	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	BLOOD GROUPING TEST
	2 nd	ANTIGEN AND ANTIBODY TYPES
	3 rd	AGGLUTINATION TEST
2 nd	1 st	TEST FOR BLOOD SAMPLE
	2 nd	ELECTROPHORESIS STUDY
	3 rd	GEL PREPARATION
3 rd	1 st	STERILIZATION PROCESS
	2 nd	ROCHERLONY ELECTROPHORESIS
	3 rd	DIFFUSION TEST
4 th	1 st	SINGLE DIFFUSION
	2 nd	DOUBLE DIFFUSION
	3 rd	BLOOD SAMPLE COLLECTION
5 th	1 st	ROCKET ELECTROPHORESIS
	2 nd	WELL PREPARATION IN GEL
	3 rd	GEL RUNNING
6 th	1 st	BUFFER PREPARATION
	2 nd	STUDY OF ELISA
	3 rd	ELISA SAMPLE COLLECTION
7 th	1 st	STUDY OF PCR
	2 nd	ELISA TEST
	3 rd	RESULTS AND OBSERVATION
8 th	1 st	DISCUSSION
	2 nd	STUDY OF ANTIGEN
	3 rd	STUDY OF ANTIBODY
9 th	1 st	DIFFERENT TYPE OF Ag AND Ab INTERACTION
	2 nd	NEUTRALIZATION REACTION
	3 rd	PRECIPITATION REACTION
10 th	1 st	VACCINES
	2 nd	CENTRIFUGATION STUDY
	3 rd	REPEAT OF EXPERIMENT 1
11 th	1 st	REPEAT OF EXPERIMENT 1
	2 nd	REPEAT OF EXPERIMENT 2
	3 rd	REPEAT OF EXPERIMENT 2

12 th	1 st	REPEAT OF EXPERIMENT 3
	2 nd	REPEAT OF EXPERIMENT 3
	3 rd	REPEAT OF EXPERIMENT 4
13 th	1 st	REPEAT OF EXPERIMENT 4
	2 nd	REPEAT OF EXPERIMENT 5
	3 rd	REPEAT OF EXPERIMENT 5
14 th	1 st	DOUBT CLEAR SESSION
	2 nd	DOUBT CLEAR SESSION
	3 rd	DOUBT CLEAR SESSION
15 th	1 st	RECORD CORRECTION
	2 nd	RECORD CORRECTION
	3 rd	RECORD CORRECTION

DISCIPLINE: Biotech	SEMESTER: 4th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: TH- Immunology (Theory)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	1.1. IMMUNITY
	2 nd	1.2. IMMUNOLOGY
	3 rd	1.3. HISTORY
	4 th	1.4. AUTO IMMUNITY
2 nd	1 st	1.5. CELLS OF IMMUNITY
	2 nd	1.6. ANTIBODY MEDIATED IMMUNITY
	3 rd	1.7. MACROPHAGE AND DENDRITIC CELL
	4 th	1.8. ACQUIRED IMMUNITY
3 rd	1 st	1.9. LYMPHOID TISSUES
	2 nd	1.10. LYMPHOID TISSUES
	3 rd	1.11. STEM CELLS
	4 th	1.12. STEM CELLS
4 th	1 st	2.1. IMMUNOGLOBULINE MOLECULES
	2 nd	2.2. ANTIBODY ANTIGEN REACTION
	3 rd	2.3. CLASSES OF ANTIBODIES
	4 th	2.4. HISTORY OF ANTIBODIES
5 th	1 st	2.5. EUTRALIZATION REACTION
	2 nd	2.6. BIOLOGY OF ANTIBODIES
	3 rd	2.7. ANTIBODIES AS CELL MEMBRANE ANTIGENRECEPTOR
	4 th	2.8. BIOTECHNOLOGICAL TOOLS
6 th	1 st	3.1. ANTIBODY PRODUCTION
	2 nd	3.2. CELL INTERACTIONS
	3 rd	3.3. HUMORAL IMMUNITY
	4 th	3.4. TEST EXAM- 1
7 th	1 st	3.5. MHC MOLECULES
	2 nd	3.6. MHC MOLECULES 1 STRUCTURE
	3 rd	3.7. MHC MOLECULES 2 STRUCTURE
	4 th	3.8. EXOCYTIC PATH WAY
8 th	1 st	3.9. ENDOCYTIC PATH WAY
	2 nd	3.10. MOUSESTRAINS
	3 rd	3.11. T AND B CELL INTERACTIONS
	4 th	3.12. ANTIGEN AND CELLS OF IMMUNITY REACTION
9 th	1 st	3.13. ANTIGEN AND MHC MOLECULE

		REACTION
	2 nd	3.14. TEST EXAM- 2
	3 rd	4.1. VACCINES
	4 th	4.2. TYPES OF VACCINES
10 th	1 st	4.3. PRODUCTION OF VACCINES THROUGH R-DNA
	2 nd	4.4. ACTIVE IMMUNIZATION
	3 rd	4.5. PASSIVE IMMUNIZATION
	4 th	4.6. DESIGNING VACCINES
11 th	1 st	4.7. LIVE VACCINES
	2 nd	4.8. ATTENUATED VACCINES
	3 rd	4.9. FUNCTION OF KILLED VACCINES
	4 th	4.10. FUNCTION OF KILLED VACCINES
12 th	1 st	4.11. SUBUNIT VACCINES
	2 nd	4.12. CONJUGATE VACCINES
	3 rd	4.13. DNA VACCINES
	4 th	4.14. RECOMBINANT AND DNA VACCINES
13 th	1 st	4.15. R- DNA TECHNOLOGY
	2 nd	4.16. PRODUCTION OF INSULIN
	3 rd	4.17. LYMPHOCYTIC PATHWAY
	4 th	5.1. AGGLUTINATION
14 th	1 st	5.2. PRECIPITATION
	2 nd	5.3. NEUTRALIZATION
	3 rd	5.4. BLOOD GROUPING
	4 th	5.5. CLUMPING
15 th	1 st	5.6. LYMPHOCYTE TRACKING
	2 nd	5.7. CELL INTERACTIONS
	3 rd	5.8. PRIMARY LYMPHOID ORGAN
	4 th	5.9. SECONDARY LYMPHOID ORGAN

DISCIPLINE: Biotechnology	SEMESTER: 4 th Sem.	NAME OF THE TEACHING FACULTY: sunil Biswajit maharana
SUBJECT: Pr-2 MICROBIOLOGY LABORATORY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 05	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	Moist Sterilization techniques
	2 nd	Dry heat Sterilization techniques
	3 rd	UV Light Sterilization techniques
	4 th	Chemical Sterilization techniques
	5 th	Glassware Sterilization techniques
2 nd	1 st	Media Sterilization techniques
	2 nd	Media Sterilization techniques
	3 rd	Flame Sterilization techniques
	4 th	Record writing and discussion.
	5 th	Record checking.
3 rd	1 st	Nutrient Broth Media preparation
	2 nd	Nutrient Broth Media preparation
	3 rd	Nutrient Broth Media preparation
	4 th	PDA Media preparation
	5 th	PDA Media preparation
4 th	1 st	PDA Media preparation
	2 nd	PDA Media preparation
	3 rd	Selective Media preparation
	4 th	Selective Media preparation
	5 th	Selective Media preparation
5 th	1 st	Selective Media preparation
	2 nd	Selective Media preparation
	3 rd	Solid growth Media preparation
	4 th	Solid growth Media preparation
	5 th	Record writing and discussion.
6 st	1 st	Record checking.
	2 nd	Isolation of bacteria ,
	3 rd	Isolation of bacteria
	4 th	Isolation of bacteria
	5 th	Isolation of bacteria
7 th	1 st	Isolation of bacteria
	2 nd	Purification of microbes.
	3 rd	Purification of microbes.
	4 th	Purification of microbes.
	5 th	Record writing and discussion.
8 th	1 st	Record checking.
	2 nd	Gram staining gram positive bacteria..
	3 rd	Gram staining gram positive bacteria..
	4 th	Gram staining gram positive bacteria..
	5 th	Gram staining gram positive bacteria..
9 th	1 st	Gram staining gram positive bacteria..
	2 nd	Gram staining gram negative bacteria.
	3 rd	Gram staining gram negative bacteria.
	4 th	Gram staining gram negative bacteria.
	5 th	Record writing and discussion.
10 th	1 st	Record checking.
	2 nd	Motility test by hanging drop method

	3 rd	Motility test by hanging drop method
	4 th	Motility test by hanging drop method
	5 th	Motility test by hanging drop method
11 st	1 st	Motility test by hanging drop method
	2 nd	Motility test by hanging drop method
	3 rd	Motility test by hanging drop method
	4 th	Motility test by hanging drop method
	5 th	Motility test by hanging drop method
12 th	1 st	Record writing and discussion.
	2 nd	Record checking.
	3 rd	Antibiotics assay
	4 th	Antibiotics assay
	5 th	Antibiotics assay
13 th	1 st	Antibiotics assay
	2 nd	Antibiotics assay
	3 rd	Antibiotics assay
	4 th	Antibiotics assay
	5 th	Antibiotics assay
14 th	1 st	Record writing and discussion.
	2 nd	Record checking.
	3 rd	Bacterial growth kinetics
	4 th	Bacterial growth kinetics
	5 th	Bacterial growth kinetics
15 th	1 st	Bacterial growth kinetics
	2 nd	Bacterial growth kinetics
	3 rd	Bacterial growth kinetics
	4 th	Record writing and discussion.
	5 th	Record checking.

DISCIPLINE: Biotechnology	SEMESTER: 4 th Sem	NAME OF THE TEACHING FACULTY: Sunil Biswajit maharana
SUBJECT: Th-2 APPLIED MICROBIOLOGY	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	SEMESTER FROM DATE: 14/03/2022 TO DATE : 11/07/2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	1.1 Discovery of microscope & microorganisms
	2 nd	1.2 Microbes & origin of life.
	3 rd	1.3 Scope of microbiology.
	4 th	1.4 Classification of microorganism
2 nd	1 st	1.5 Distribution of microorganisms
	2 nd	1.6 Structure of bacteria.
	3 rd	1.6 Morphology of bacteria..
	4 th	1.7 Structure & morphology Virus
3 rd	1 st	1.7 Structure & morphology Fungi,
	2 nd	1.7 Structure & morphology Actinomycetes.
	3 rd	2.1 Nutritional requirements & nutritional forms.
	4 th	2.2 Growth cycle of bacteria.
4 th	1 st	2.2 Growth cycle of bacteria.
	2 nd	2.3 Batch culture, Continuous culture, Synchronous culture.
	3 rd	2.3 Batch culture, Continuous culture, Synchronous culture.
	4 th	2.4 Generation time & Measurement of growth.
5 th	A	2.4 Generation time & Measurement of growth.
	2 nd	2.5 Inherence of environmental factors on growth.
	3 rd	3.1 Microscopy
	4 th	3.2 About Staining
6 st	1 st	3.2 Types of Staining
	2 nd	3.3 About Culture Media
	3 rd	3.3 Types of Culture Media
	4 th	3.4 About and types of Sterilization
7 th	1 st	3.5 Procedure of Isolation of pure culture.
	2 nd	3.5 maintenance of pure cultures
	3 rd	4.1 Mutation.
	4 th	4.1 Mutation.
8 th	1 st	4.2 Isolation of microbial mutant
	2 nd	4.2 Isolation of microbial mutant
	3 rd	4.3 Genetic recombination in bacteria: - Conjugation,
	4 th	4.3 Genetic recombination in bacteria: - Conjugation,
9 th	1 st	4.4 Transformation and Transduction.
	2 nd	4.4 Transformation and Transduction.
	3 rd	5.1 Microbial association types.
	4 th	5.1 Microbial association types.

10 th	1 st	5.2 Modes of N ₂ fixation.
	2 nd	5.2 Modes of N ₂ fixation.
	3 rd	5.3 Enzymes in N ₂ fixation.
	4 th	5.3 Enzymes in N ₂ fixation.
11 st	1 st	5.4 Mechanism of N ₂ fixation.
	2 nd	5.4 Mechanism of N ₂ fixation.
	3 rd	6.1 Microbial respiration: Common pathways to both aerobic and aerobic respiration.
	4 th	6.1 Microbial respiration: Common pathways to both aerobic and aerobic respiration.
12 th	1 st	6.1 Microbial respiration: Common pathways to both aerobic and aerobic respiration.
	2 nd	6.1 Microbial respiration: Common pathways to both aerobic and aerobic respiration.
	3 rd	6.2 Aerobic pathways
	4 th	6.2 Aerobic pathways
13 th	1 st	6.3 Fermentation
	2 nd	6.3 Fermentation
	3 rd	6.4 Microbial photosynthesis.
	4 th	6.4 Microbial photosynthesis.
14 th	1 st	7.1 Microbial food contamination.
	2 nd	7.2 Microbial food spoilages
	3 rd	7.3 Food borne diseases by microorganisms
	4 th	7.3 Food borne diseases by microorganisms
15 th	1 st	7.4 Food preservation.
	2 nd	7.4 Food preservation.
	3 rd	7.5 Important viral diseases.
	4 th	7.6 Important t bacterial diseases

DISCIPLINE: Biotech	SEMESTER: 4th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi & Sunil Biswajit Maharana
SUBJECT: TH - Organic Chemistry (Theory)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	1.1. INTRODUCTION
	2 nd	1.2. INTRODUCTION
	3 rd	1.3. DIFFERENTIATE ORGANIC AND INORGANIC CHEMISTRY
	4 th	1.4. NOMENCLATURE
2 nd	1 st	1.5. IUPAC NAMING
	2 nd	1.6. SCOPE OF ORGANIC CHEMISTRY
	3 rd	1.7. ORGANIC COMPOUNDS
	4 th	1.8. INORGANIC COMPOUNDS
3 rd	1 st	1.9. CLASSIFICATION OF ORGANIC COMPOUNDS
	2 nd	1.10. SOURCES OF ORGANIC COMPOUNDS
	3 rd	1.11. ORGANIC CHEMISTRY IN MODERN LIFE
	4 th	1.12. ISOMERISM
4 th	1 st	1.13. TYPES AND CLASSIFICATION
	2 nd	1.14. MONOFUNCTIONAL ORGANIC COMPOUNDS
	3 rd	1.15. POLYFUNCTIONAL ORGANIC COMPOUNDS
	4 th	2.1. ALIPHATIC COMPOUNDS
5 th	1 st	2.2. PREPARATION
	2 nd	2.3. PROPERTIES AND USE OF CH ₄
	3 rd	2.4. PROPERTIES AND USE OF C ₂ H ₅
	4 th	2.5. ETHYLENE PREPARATION
6 th	1 st	2.6. ETHYLENE PROPERTIES
	2 nd	2.7. PREPARATION OF ACETYLENE
	3 rd	2.8. PROPERTIES OF ACETYLENE
	4 th	2.9. PREPARATION OF METHANOL
7 th	1 st	2.10. PROPERTIES OF METHANOL
	2 nd	2.11. PREPARATION OF ETHANOL
	3 rd	2.12. PROPERTIES OF ETHANOL
	4 th	2.13. ABSOLUTE ALCOHOL
8 th	1 st	2.14. DENATURED ALCOHOL
	2 nd	2.15. PREPARATION OF FORMIC ACID
	3 rd	2.16. PROPERTIES OF FORMIC ACID
	4 th	2.17. PREPARATION OF ACETIC ACID
9 th	1 st	2.18. PROPERTIES OF ACETIC ACID
	2 nd	2.19. PREPARATION OF FORMAL DEHYDE
	3 rd	2.20. PROPERTIES OF FORMAL DEHYDE
	4 th	3.1. PREPARATION OF ACETONE
10 th	1 st	3.2. PROPERTIES OF ACETONE
	2 nd	3.3. AROMATIC COMPOUNDS
	3 rd	3.4. PREPARATION AND PROPERTIES OF

		AROMATIC COMPOUNDS
	4 th	3.5. PREPARATION OF BENZENE
11 th	1 st	3.6. PROPERTIES OF BENZENE
	2 nd	3.7. PREPARATION OF TOLUENE
	3 rd	3.8. PROPERTIES OF TOLUENE
	4 th	3.9. PREPARATION OF PHENOL
12 th	1 st	3.10. PROPERTIES OF PHENOL
	2 nd	3.11. PREPARATION OF BENZAL DEHYDE
	3 rd	3.12. PROPERTIES OF BENZAL DEHYDE
	4 th	3.13. DIFFERENT FUNCTIONAL GROUP
13 th	1 st	3.14. CHARACTERISTICS OF FUNCTIONAL GROUP
	2 nd	4.1. CARBOHYDRATES
	3 rd	4.2. CLASSIFICATION OF CARBOHYDRATES
	4 th	4.3. SYNTHESIS OF MONOSACCHARIDES
14 th	1 st	4.4. PROPERTIES OF GLUCOSE, FRUCTOSE
	2 nd	4.5. PROPERTIES OF SUCROSE, STARCH
	3 rd	4.6. CLASSIFICATION OF AMINO ACID
	4 th	4.7. CLASSIFICATION OF PROTEIN
15 th	1 st	4.8. AMINO ACID AND PEPTIDE BOND
	2 nd	4.9. PROPERTIES AND USE OF PROTEINS
	3 rd	4.10. FATS- CLASSIFICATION
	4 th	4.11. PROPERTIES AND SOURCES OF FATS

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: Biochemistry (Practical)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 06	FROM DATE: 01-10-2021 TO DATE: 08-01-2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	PRACTICAL TOPICS
1 st	1 st	About pH meter
	2 nd	Determination of Pka value
	3 rd	Relation between pH and Pka
	4 th	Numericals
	5 th	Numericals
	6 th	Numericals
2 nd	1 st	Qualitative tests demonstration
	2 nd	Test for Carbohydrates
	3 rd	Test for protein
	4 th	Results and discussions
	5 th	Results and discussions
	6 th	Results and discussions
3 rd	1 st	Repeat Exp- 1
	2 nd	Repeat Exp- 1
	3 rd	Repeat Exp- 1
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
4 th	1 st	Anthrone reagent preparation
	2 nd	Preparation of stock
	3 rd	Preparation of stock
	4 th	Results and discussions
	5 th	Results and discussions
	6 th	Results and discussions
5 th	1 st	Repeat Exp- 2
	2 nd	Repeat Exp- 2
	3 rd	Repeat Exp- 2
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
6 th	1 st	Discussion about reducing sugar
	2 nd	Benedicts reagent preparation
	3 rd	Discuss about colori meter
	4 th	Discuss about Spectro meter
	5 th	Discuss about visible length of light
	6 th	Discuss about visible length of light
7 th	1 st	Estimation of reducing sugar
	2 nd	Estimation of reducing sugar by Benedicts test
	3 rd	Estimation of reducing sugar by Benedicts test
	4 th	Repeat Exp- 3
	5 th	Repeat Exp- 3
	6 th	Repeat Exp- 3
8 th	1 st	Checking of records

	2 nd	Checking of records
	3 rd	Checking of records
	4 th	Discuss about fatty acid
	5 th	Fatty acid seponification
	6 th	Titration
9 th	1 st	Fatty acid titration with use of oil
	2 nd	More About titration
	3 rd	Results
	4 th	Repeat Exp- 4
	5 th	Repeat Exp- 4
	6 th	Checking of records
10 th	1 st	Beer Lambarts Law
	2 nd	Colorimeter using for Beers Law
	3 rd	Verification of Beer Lambarts Law
	4 th	Repeat Exp- 5
	5 th	Repeat Exp- 5
	6 th	Repeat Exp- 5
11 th	1 st	Checking of records
	2 nd	Checking of records
	3 rd	Checking of records
	4 th	About Iodine value
	5 th	Discuss about fats
	6 th	Determine the Iodine value of different fat samples
12 th	1 st	Repeat Exp- 6
	2 nd	Repeat Exp- 6
	3 rd	Repeat Exp- 6
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
13 th	1 st	Discuss about Amino acid
	2 nd	Structure of Amino acid
	3 rd	Classification of Amino acid
	4 th	Ninhydrin reagent preparation
	5 th	Quantify Amino acid using in ninhydrine reagent
	6 th	Quantify Amino acid using in ninhydrine reagent
14 th	1 st	Repeat Exp- 7
	2 nd	Repeat Exp- 7
	3 rd	Repeat Exp- 7
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records
15 th	1 st	Repeat Exp- 8
	2 nd	Repeat Exp- 8
	3 rd	Repeat Exp- 8
	4 th	Checking of records
	5 th	Checking of records
	6 th	Checking of records

DISCIPLINE: Biotech	SEMESTER: 5th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: Biochemistry (Theory)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	FROM DATE: 01-10-2021 TO DATE: 08-01-2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	About organic Chemistry
	2 nd	Basics of Biochemistry
	3 rd	Functions of Carbohydrates
	4 th	Structure and function of monosaccharides
2 nd	1 st	Structure and function of disaccharides
	2 nd	Structure and function of polysaccharides
	3 rd	Proteoglycans
	4 th	Glycoprotein with glycolipids
3 rd	1 st	Some commercially important carbohydrates
	2 nd	Amino acids, Peptides and proteins
	3 rd	Structure and function of amino acids
	4 th	Classification of amino acids
4 th	1 st	Functional group of amino acids
	2 nd	Biological activity of small peptides
	3 rd	Biosynthesis of amino acids
	4 th	Structure and function of protein
5 th	1 st	Different types of protein with respect to their structure and function
	2 nd	Nucleotides and Nucleic Acid
	3 rd	Structure and function of nucleotides
	4 th	Properties of nucleotide bases that affect the structure of nucleic acid
6 th	1 st	Chemistry of nucleic acid
	2 nd	Structure of nucleic acid
	3 rd	Lipids and Fats
	4 th	Storage lipids.
7 th	1 st	Structural lipids
	2 nd	Lipids with specific biological activities
	3 rd	Lipid Bilayer
	4 th	Amphipathic nature of membrane lipids that form the bilayer.
8 th	1 st	Role of lipid in plasma membrane
	2 nd	Function of protein
	3 rd	Nucleotide and nucleoside formation
	4 th	About DNA structure
9 th	1 st	DNA synthesis
	2 nd	RNA structure
	3 rd	RNA synthesis
	4 th	Protein synthesis
10 th	1 st	Chemistry of nucleic acid
	2 nd	Properties of nucleotide bases
	3 rd	Structure of nucleic acid
	4 th	Test 1

11 th	1 st	Storage lipid & Destructural lipids
	2 nd	Biological function of lipid
	3 rd	Test 2
	4 th	Plasma membrane structure
12 th	1 st	Plasma membrane functions
	2 nd	Cell and biosynthesis
	3 rd	Amphipathic nature of membrane
	4 th	Adipose tissue
13 th	1 st	Fat biosynthesis
	2 nd	Mono- glycerides & Di-glyceride structure
	3 rd	Lipid bilayer & Lipid biosynthesis
	4 th	Determination of pH color comparison pH meter determination of PKa value
14 th	1 st	Qualitative tests on carbohydrates and proteins
	2 nd	Estimation of total sugar by anthrone method
	3 rd	Estimation of reducing sugar by Benedict's test
	4 th	Fatty acid titration
15 th	1 st	Verification of Beer Lambert's law
	2 nd	Determine iodine value of different fat samples
	3 rd	Quantify amino acid using ninhydrin reaction
	4 th	Test 3

DISCIPLINE: Biotechnology	SEMESTER:6th Sem.	NAME OF THE TEACHING FACULTY: Sunil Biswajit maharana
SUBJECT: Pr2. BIOPROCESS ENGINEERING LAB	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:05	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022 NO. OF WEEKS:12
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	Discussion about industrially important organism
	2 nd	Isolation of industrially important organism for microbial process.
	3 rd	Isolation of industrially important organism for microbial process.
	4 th	Isolation of industrially important organism for microbial process.
	5 th	Isolation of industrially important organism for microbial process.
2 nd	1 st	Isolation of industrially important organism for microbial process.
	2 nd	Isolation of industrially important organism for microbial process.
	3 rd	Isolation of industrially important organism for microbial process.
	4 th	Record writing and discussion.
	5 th	Record checking.
3 rd	1 st	Determination of thermal death point of microorganism.
	2 nd	Determination of thermal death point of microorganism.
	3 rd	Determination of thermal death point of microorganism.
	4 th	Determination of thermal death point of microorganism.
	5 th	Determination of thermal death point of microorganism.
4 th	1 st	Determination of thermal death point of microorganism.
	2 nd	Determination of thermal death point of microorganism.
	3 rd	Determination of thermal death point of microorganism.
	4 th	Record writing and discussion.
	5 th	Record checking.
5 th	1 st	Determination of growth of microorganism
	2 nd	Determination of growth of microorganism
	3 rd	Determination of growth of microorganism
	4 th	Determination of growth of microorganism
	5 th	Determination of growth of microorganism
6 st	1 st	Determination of growth of microorganism
	2 nd	Determination of growth of microorganism
	3 rd	Determination of growth of microorganism
	4 th	Record writing and discussion.
	5 th	Record checking.
7 th	1 st	Determination of substrate degradation profile..
	2 nd	Determination of substrate degradation profile..
	3 rd	Determination of substrate degradation profile..
	4 th	Determination of substrate degradation profile..
	5 th	Determination of substrate degradation profile..
8 th	1 st	Determination of substrate degradation profile..
	2 nd	Determination of substrate degradation profile..
	3 rd	Determination of substrate degradation profile..
	4 th	Record writing and discussion.
	5 th	Record checking.
9 th	1 st	Ethanol production using different substrate.
	2 nd	Ethanol production using different substrate.

	3 rd	Ethanol production using different substrate.
	4 th	Ethanol production using different substrate.
	5 th	Ethanol production using different substrate.
10 th	1 st	Record writing and discussion.
	2 nd	Record checking.
	3 rd	Growth kinetics of yeast- evaluation of specific growth rate, yield coefficient and doubling time
	4 th	Growth kinetics of yeast- evaluation of specific growth rate, yield coefficient and doubling time
	5 th	Growth kinetics of yeast- evaluation of specific growth rate, yield coefficient and doubling time
11 st	1 st	Growth kinetics of yeast- evaluation of specific growth rate, yield coefficient and doubling time
	2 nd	Growth kinetics of yeast- evaluation of specific growth rate, yield coefficient and doubling time
	3 rd	Record writing and discussion.
	4 th	Record checking.
	5 th	Growth kinetics of bacteria- evaluation of specific growth rate, yield coefficient and doubling time.
12 th	1 st	Growth kinetics of bacteria- evaluation of specific growth rate, yield coefficient and doubling time.
	2 nd	Growth kinetics of bacteria- evaluation of specific growth rate, yield coefficient and doubling time.
	3 rd	Growth kinetics of bacteria- evaluation of specific growth rate, yield coefficient and doubling time.
	4 th	Record writing and discussion.
	5 th	Record checking.

DISCIPLINE: Biotechnology	SEMESTER: 6 th Sem	NAME OF THE TEACHING FACULTY: sunil Biswajit maharana
SUBJECT: Th3. BIOPROCESS ENGINEERING	NO. OF DAYS/ PER WEEK CLASS ALLOTTED:04	SEMESTER FROM DATE: 14/03/2022 TO DATE : 11/07/2022 NO. OF WEEKS:15
WEEK	CLASS DAY	THEORY/ PRACTICAL TOPICS
1 st	1 st	1.1 About Bioreactor
	2 nd	1.1 General features of Bioreactor.
	3 rd	1.1 What is downstream process?
	4 th	1.2 Preservation of industrial microorganisms.
2 nd	1 st	1.2 Maintenance of industrial microorganisms.
	2 nd	1.3 Kinetics of microbial growth and death.
	3 rd	1.3 Phases of Growth.
	4 th	1.3 Lag phase, Log phase and death phase
3 rd	1 st	1.4 Regarding Air Sterilization.
	2 nd	1.4 Regarding Media Sterilization.
	3 rd	2.1 Regarding Types of Fermentation.
	4 th	2.1 Batches types of Fermentation.
4 th	1 st	2.1 Aerobic Fermentation.
	2 nd	2.1 Anaerobic Fermentation.
	3 rd	2.1 Anaerobic Fermentation.
	4 th	2.2 Fed Batch and Continuous Bioreactor
5 th	A	2.2 Characters of Fed Batch fermentation
	2 nd	2. 2 Solid state fermentation.
	3 rd	2.2 Continuous Bioreactor
	4 th	2.3 Specialized Bioreactor: Pulsed
6 st	1 st	2.3 Specialized Bioreactor: Fluidized
	2 nd	2.3 Specialized Bioreactor: Bubble Colum bioreactor.
	3 rd	2.3 Specialized Bioreactor: Air lift Fermentation.
	4 th	2.3 Photo bioreactor
7 th	1 st	2.4 Bioprocess Parameters: Measurement and Control.
	2 nd	3.1 Introduction to General idea on downstream processing.
	3 rd	3.2 Removal of microbial cells.
	4 th	3.2 Removal of Solid matter
8 th	1 st	3.2 Methods of foam separation
	2 nd	3.2 Methods of precipitation
	3 rd	3.2 Methods filtration Centrifugation,
	4 th	3.2 Methods cell disruption
9 th	1 st	3.2 Methods of liquid-liquid extraction
	2 nd	3.3 Chromatography: Role of chromatography in downstream processing.
	3 rd	3.3 Chromatography: Role of chromatography in downstream processing.
	4 th	3.4 Regarding purification.
10 th	1 st	3.4 Methods of Dialysis.

	2 nd	3.4 Methods of Drying
	3 rd	3.4 Methods of Crystallization.
	4 th	3.4 Methods of Crystallization.
11 st	1 st	4.1 Methods of cell immobilization .
	2 nd	4..1A applications in industries
	3 rd	4.2 Production of Alcohol (Ethanol).
	4 th	4.2 Production of Glycerol
12 th	1 st	4.2 Production of Acetone
	2 nd	4.3 Production of Antibiotics (Penicillin).
	3 rd	4.3 Production of Antibiotics (Streptomycin)
	4 th	4.3 Antibiotics (Tetracycline)
13 th	1 st	4.4 Sources of Single Cell Protein.
	2 nd	4.4 Methods of Single Cell Protein.
	3 rd	5.1 Methods of Sterilization
	4 th	5.1 Methods of Sterilization
14 th	1 st	5.1 Methods of Pasteurization
	2 nd	5.1 Methods of Pasteurization
	3 rd	5.2 About food Preservation
	4 th	5.2 Techniques used in of food Preservation.
15 th	1 st	5.2 Techniques used in of food Preservation
	2 nd	5.2 Techniques used in of food Preservation
	3 rd	5.3 Regarding Packing.
	4 th	5.3 Methods of Packing.

DISCIPLINE: Biotech	SEMESTER: 6th	NAME OF THE TEACHING FACULTY: Dr. Sasmita Panigrahi
SUBJECT: TH- Pharmaceutical Technology (Theory)	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 04	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	1.1. BASICS OF PHARMACY
	2 nd	1.2. HISTORY OF PHARMACY
	3 rd	1.3. ABOUT PHARMACEUTICAL INDUSTRY
	4 th	1.4. DRUGS PREPARATION
2 nd	1 st	1.5. BASIC TERMINOLOGIES
	2 nd	1.6. QUALITY ISSUES AND DEVELOPMENT
	3 rd	2.1. DRUG KINETICS
	4 th	2.2. BIO PHARMACEUTICS
3 rd	1 st	2.3. DRUG ABSORPTION
	2 nd	2.4. DRUG DISTRIBUTION
	3 rd	2.5. DRUG METABOLISM
	4 th	2.6. MECHANISM OF DRUG EXCRETION
4 th	1 st	2.7. ADME PROCESS
	2 nd	2.8. BIOEQUIVALENCE
	3 rd	3.1. DRUG MANUFACTURE
	4 th	3.2. LIQUID DOSAGE FORMS
5 th	1 st	3.3. TOPICAL FORMS
	2 nd	3.4. SOLID DOSAGE FORMS
	3 rd	3.5. ANTIBIOTICS
	4 th	3.6. SULPHA DRUGS
6 th	1 st	3.7. ANALGESICS
	2 nd	3.8. SYNTHETIC DRUGS
	3 rd	3.9. VITAMINS AND SYNTHETIC HORMONES
	4 th	4.1. BIOPHARMACEUTICALS
7 th	1 st	4.2. PHARMACOLOGY
	2 nd	4.3. PHARMACOKINETICS
	3 rd	4.4. PHARMACODYNAMICS
	4 th	4.5. RECOMBINANT THERAPEUTICS
8 th	1 st	
	2 nd	4.6. MONOCLONAL ANTIBODIES
	3 rd	4.7. VACCINES
	4 th	4.8. GENE THERAPY
9 th	1 st	4.9. ANTIBIOTICS AND HORMONES

	2 nd	4.10. THERAPEUTICS
	3 rd	5.1. IMMUNOGENICITY OF BIOPHARMACEUTICALS
	4 th	5.2. IMMUNOGENICITY
10 th	1 st	5.3. FACTORS CONTRIBUTING TO IMMUNOGENICITY
	2 nd	5.4. PRODUCT RELATED FACTORS
	3 rd	5.5. HOST-RELATED FACTORS
	4 th	5.6. CASE STUDIES
11 th	1 st	5.7. ERYTHROPOIETIN
	2 nd	5.8. INSULIN
	3 rd	5.9. DNAS
	4 th	5.11. FACTOR IX
12 th	1 st	5.12. ACTIVATED PROTEIN C
	2 nd	5.13. MONOCLONAL ANTIBODIES
	3 rd	6.1. FACTOR VIIA
	4 th	6.2. THERAPEUTIC PROTEIN
13 th	1 st	6.3. R- DNA TECHNOLOGY
	2 nd	6.4. USE OF ANALGESICS
	3 rd	6.5. ABOUT SULPHA DRUGS
	4 th	6.6. HORMONE PRODUCTION
14 th	1 st	6.7. ERYTHROPOIETIN
	2 nd	6.8. HOST RELATED FACTORS
	3 rd	6.9. ANTI MALERIAL DRUGS
	4 th	6.10. ANTI T.B. DRUGS
15 th	1 st	6.11. ACTIVATED PROTEIN C
	2 nd	6.12. FACTOR VIIIA
	3 rd	6.13. GENE THERAPY
	4 th	6.14. TEST 1

DISCIPLINE: BIOTECHNOLOGY	SEMESTER: 6th	NAME OF THE TEACHING FACULTY:
SUBJECT: Plant Safety Management	NO. OF DAYS/PER WEEK CLASS ALLOTTED: 4	SEMESTER FROM DATE: 14/03/2022 TO DATE: 11/07/2022 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	Fundamental of safety
	2 nd	Unsafe act and unsafe condition
	3 rd	Integration of Safety, Health and Environment
	4 th	Integration of Safety, Health and Environment
2 nd	1 st	Objective Safety Management
	2 nd	principle of Safety Management
	3 rd	Terms and definition used in safety management
	4 th	Classification of accidents
3 rd	1 st	SAFE WORKING PRACTICE
	2 nd	Good Housekeeping practice
	3 rd	Work place safety
	4 th	Safe working environment
4 th	1 st	Spot a hazard to stop an accident
	2 nd	Precaution in use of ladder
	3 rd	Safety instruction during maintenance
	4 th	Safety measures during handling of compressed system
5 th	1 st	Safety measures during handling of cylinders
	2 nd	Safety measures during handling of painting Equipments
	3 rd	Permit to work system
	4 th	PERSONAL PROTECTIVE EQUIPMENTS (PPE)
6 th	1 st	Requirement of personal protective equipment
	2 nd	Classification of Hazards
	3 rd	Personal protective equipments for different parts of body
	4 th	Guideline to use personal protective equipment
7 th	1 st	Revision
	2 nd	Class test
	3 rd	FIRE PREVENTION AND FIRE FIGHTING
	4 th	Fundamentals of fire, elements of fire
8 th	1 st	Terms and definition in Fire Management
	2 nd	Classification of fire and fire extinguishing technique
	3 rd	Causes of fire and its prevention
	4 th	Different types of fire extinguisher and their application
9 th	1 st	Different types of fire extinguisher and their application

	2 nd	Precaution for prevention of fire
	3 rd	Revision
	4 th	Class test
10 th	1 st	CHEMICAL HAZARDS
	2 nd	Classification of Chemical Hazards
	3 rd	Factors influencing effects of toxic chemicals
	4 th	Factors influencing effects of toxic chemicals
11 th	1 st	Terms related to concentration level as per industrial hygiene norm
	2 nd	Control measure for Chemical hazards
	3 rd	Control measure for Chemical hazards
	4 th	ELECTRICAL SAFETY
12 th	1 st	ELECTRICAL SHOCK AND THEIR PREVENTION
	2 nd	Introduction to electrical safety
	3 rd	Precaution and safety in use of electricity
	4 th	Precaution and safety in use of electricity
13 th	1 st	Electrical hazards in Industrial system
	2 nd	Electrical hazards in Industrial system
	3 rd	Safety provision to prevent electrical hazards
	4 th	Safety provision to prevent electrical hazards
14 th	1 st	MECHANICAL HAZARDS
	2 nd	Sources of mechanical hazards
	3 rd	Machine Guard and Safety devices
	4 th	Pressure hazards and pressure vessel
15 th	1 st	Safety measures in use of gas cylinders
	2 nd	Types of maintenance (example- Breakdown, preventive)
	3 rd	Revision
	4 th	Class test