SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-560057

(An ISO 9001:2015 & 14001:2015 Certified Institution)
(Affiliated to VTU, Belagavi and approved by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade) (Accredited by NBA for ECE, CSE, ISE, ME, EEE)

DEPARTMENT OF BIOTECHNOLOGY

Academic Year: 2022-23

COURSE FILE

INDEX

List of Documents

Signature of Faculty **HOD**

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
DEPARTMENT OF BIOTECHNOLOGY

Ay: 2022-2023
2022-ODD

COLLEGE VISION AND MISSION

VISION

To be a best institution imparting quality engineering education to deal with community needs through learning and performance.

MISSION

1. To implement path breaking student centric education methods.
2. To augment talent, nurture teamwork to transform to develop individual as responsible citizen.
3. To educate the students and faculties about entrepreneurship to meet vibrant requirements of the society.
4. Strengthen Industry-Institute Interaction for knowledge sharing.

DEPARTMENTAL VISION AND MISSION

VISION

To be a centre of excellence in the field of biotechnology equipped to create technically strong, ethically, morally strong global man power that endeavor for the welfare of mankind.

MISSION

1. To impart innovative and value added teaching with high research aptitude to forge connection between academia and industry

2. To create awareness towards sustainable socio-ethical and environmental implications of potentials of biotechnology

3. To develop new generation scholars and entrepreneurs in the field of biotechnology to be instrumental in economic growth of the country.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bangaluru - 560 057

Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore

F-TLP-01/RO

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(ISO: 9001-2015 and ISO: 14001-2015 certified, NAAC accredited with A Grade)
14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057

DEPARTMENT OF BIOTECHNOLOGY

Subject Allotment for ODD Semester 2022-23

III Semester

.No.	Subject Code	Subject Title	Dept.	Name of the Faculty	Signature
1	21MAT31	Mathematics course	BT	Prof.Shwetha B S	
2	1PCC21BT32	Unit operations + lab	BT	Prof.Kavya M V/Dr Allwin Ebinesar J SS	
3	1PCC21BT33	Biochemistry + lab	BT	Dr Veena S More/Dr Chaitra B S	
4	1PCC21BT34	Microbiology	BT	Dr.Soumya C	
5	1PCC21BTL35	Microbiology lab	BT	Dr.Soumya C/Dr Gouri Mirji	
6	UHV21UH36	Social Connect and Responsibility	BT	Dr Gouri Mirji	
7	HSMC 21CIP37/47	Constitution of India and Professional Ethics	Any Dept	Prof.Antharaj	
8	21BT383	Biodiversity and Conservation Law	BT	Dr Gouri Mirji	

V Semester

.No.	Subject Code	Subject Title	Dept.	Name of the Faculty	Signature
1	18BT51	Bio-Business and Entrepreneurship	BT	Prof.Ananda H V	
2	18BT52	Chemical Reaction Engineering	BT	Dr Allwin Ebinesar J S S	
3	18BT53	Enzyme Technology & Biotransformation	BT	Dr.Shobha G	
4	18BT54	Genomics & Proteomics	BT	Dr.Soumya C	
5	18BT55	Bio analytical Techniques	BT	Dr Chaithra B S	
6	18BT56	Genetic Engineering &Applications	BT	Prof.Ramya D L	
7	18BTL57	Biokinetics & Enzyme Technology Laboratory	BT	Dr Shobha G/ Prof.Kavya M V	
8	18BTL58	Genetic Engineering and Cell Culture Laboratory	BT	Prof.Ramya D L/ Prof.Gowthami N V	
9	18CIV59	Environmental Studies	CIVIL	Prof.Kavya A P	

VII Semester

Sl.No.	Subject Code	Subject Title	Dept.	Name of the Faculty	Signature
1	18BT71	Bioprocess Engineering	BT	Prof.Kavya M V	
2	18BT72	Clinical & Pharmaceutical BT	BT	Dr. Chaitra B S	
3	18BT732	Bioreactor Design Concepts	BT	Dr. Allwin Ebinesar J S S	
4	18BT742	Agricultural Biotechnology	BT	Dr Shobha G	
5	18BT752	Open elective-Forensic science	BT	Prof.Ramya D L/Dr Gouri Mirji	
6	18BTL76	Bioprocess Engineering Laboratory	BT	Dr Allwin Ebinesa /Prof.Gowthami N V	
7	18BTL77	Project Work Phase – 1	BT	Dr.Shobha G	
8	18BTP71	Internship	BT	Dr Chaitra B S	

HOD, BT
Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

PRINCIPAL
Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI
College of Engineering
Creating Tommorow

SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(ISO: 9001-2015 and ISO: 14001-2015 certified, NAAC accredited with A Grade)
14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057

DEPARTMENT OF BIOTEHNOLOGY

SUBJECT ALLOTMENT LETTER 2022-23 -ODD SEM

Name of the Faculty: **Dr.Soumya C**

Designation: **Assistant Professor**

Allotted Theory Subjects:

Subject 1	Subject Code	SEM	Subject 2	Subject Code	SEM	Signature of the Faculty
Microbiology	21BT34	III	Genomics & Proteomics	18BT54	V	

Allotted Labs:

Lab 1	Lab Code	SEM	Signature of the Faculty
Microbiology Lab	21BTL35	III	

HOD

Dept. of BT
Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta M Road
Bangalore -57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

B. E. BIOTECHNOLOGY
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
SEMESTER - V

GENOMICS AND PROTEOMICS

Course Code	18BT54	CIE Marks	40
Teaching Hours/Week (L:T:P)	(3:1:0)	SEE Marks	60
Credits	03	Exam Hours	03

Course Learning Objectives:

- To inculcate interdisciplinary approach of learning.
- To comprehend applications of basic aspects of biotechnology
- To impart knowledge on application of software tools for biological studies

Module-1

INTRODUCTION:

Genes and Proteins, Polymorphisms – types of polymorphism, genome sequences and database subscriptions, discovery of new genes and their function. Early sequencing efforts. Extraction of DNA, Methods of preparing genomic DNA for sequencing, DNA sequence analysis methods-Maxam& Gilbert Method, Sanger Di-deoxy method, Fluorescence method, shot-gun approach. NGS – different methods and principles

Module-2

GENOMICS:

Inheritance pattern in eukaryotes, Mutations, Gene variation and Single Nucleotide Polymorphisms (SNPs), Expressed sequenced tags (ESTs), Gene-disease association, diagnostic genes and drug targets, genotyping tools - DNA Chips, diagnostic assays, diagnostic services. Functional genomic studies with model systems such as Drosophila, Yeast or *C. elegans*. Genome projects on *E.coli*., Arabidopsis and rice; Human genome project and the genetic map.

Module-3

GENOME MANAGEMENT :

Cell differentiation and gene regulation. C-Values of genomes. General architecture of prokaryotic and eukaryotic genome. Organization of eukaryotic genome within the nucleus, chloroplast and mitochondria. Regulation of transcription, transcription factors and the co-ordination of gene expression. Interference RNA, RNA silencing, SiRNA: Applications in Functional genomics, Medicine and Gene Knockdown. Gene Editing - Crispr Cas9

Module-4

GENOME ANALYSIS :

Genetic and physical maps: Breeding requirements for mapping. Molecular markers - RFLP, RAPD, AFLP, SCAR, CAPS, microsatellites and SNPs. Methods of molecular mapping, Marker assisted selection. Map-based cloning, T-DNA and transposon tagging. Differential display via RT-PCR. Micro-array in functional genomics. Bioinformatics analysis – clustering methods. FISH - DNA amplification markers; Telomerase as molecular markers. STS mapping.

Module-5

PROTEOMICS :

Introduction to proteins, Large scale preparation of proteins and peptides, Merrifield Synthesis of peptides, use of peptides as probes.proteins as drugs; two hybrid interaction screens. Mass-spec based analysis of protein expression. "Protein Chip" - interactions and detection techniques. Two dimensional PAGE for proteome analysis, Detection of proteins on SDS gels, Protein cleavage, Edman protein microsequencing, Automation in proteomics, Applications of proteome analysis to drug development and toxicology, Phage antibodies as tools for proteomics.

Course Outcomes:

At the end of the course the student will be able to:

- Define structural, comparative and functional genomics and proteomics and its uses in various research fields
- Describe various methods and techniques of Genomics, high throughput DNA sequencing technology, expression profiling, proteome analysis, and its applications.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook/s				
1	Introduction to Genomics	Arthur M Lesk	Oxford University Press	2007
2	Discovering Genomics, Proteomics & Bioinformatics	A M Campbell & L J Heyer	Pearson Education,	2007
3	Proteins and Proteomics	Richard J Simpson	IK International	2003
Reference Books				
1	Genomics & Proteomics	Sabesan	Ane Books	2007
2	Purifying Proteins for Proteomics	Richard J Simpson	IK International	2004

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

MICROBIOLOGY			
Course Code	21BT34	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:1:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course objectives:

- To understand the details of classification, structural features and functional aspects of prokaryotic and eukaryotic microorganisms.
- To learn different techniques of microscopy and be able to describe microbial techniques for growth, cultivation and characterization of microorganisms.
- To explain microbial metabolism, growth and control of microorganisms.
- To describe and relate the occurrence of microbes caused diseases.
- To analyse various industrial applications of microbiology.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- ✓ Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry based teaching.
- ✓ Instructions with interactions in classroom lectures (physical/hybrid).
- ✓ Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- ✓ Flipped classroom sessions (~10% of the classes).
- ✓ Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- ✓ Students' participation through audio-video based content creation for the syllabus (as assignments).
- ✓ Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- ✓ Students' seminars (in solo or group) /oral presentations.

Module-1 (8 hours)

OVERVIEW OF MICROBIOLOGY AND MICROORGANISMS:

Scope and History of Microbiology (Major milestones). Prokaryotes, Archaea and Eukaryotes. Microbial diversity and Taxonomy. Classification, characteristics and reproduction of Bacteria, Viruses, Fungi, Protozoa, Algae. General features of true bacteria (Rickettsia, Mycoplasma and Chlamydia), Prions, Spirochetes, Actinomycetes. Case studies.

Module-2 (8 hours)

METHODS AND TECHNIQUES IN MICROBIOLOGY:

Basic principles of Microscopy, Bright-Field, Dark-Field, Phase-Contrast, Acoustic, Fluorescence, Electron Microscopy: SEM, TEM. Micrometry. Media: types and preparation. Pure culture Techniques (streak-plate, spread plate, pour plate). Staining techniques (Simple and differential). Case studies.

Module-3 (8 hours)

MICROBIAL GROWTH, METABOLISM AND CONTROL:

Microbial growth: Phases, Factors affecting growth, growth measurement and enumeration. Microbial Genetics (Brief introduction to Transformation, Transduction and Conjugation). Metabolism; Primary and Secondary metabolites with examples, metabolic pathways important in microorganisms- Respiration and Fermentation (EMP, HMP, ED, Phospho ketolase, Mixed acid, TCA).Quorum sensing. Control of growth (Sterilization and disinfection techniques).Case studies.

Module-4 (8 hours)

MICROBIOLOGY AND DISEASES:

Common diseases caused by microbes: viruses (Polio, H1N1, SARS, Covid-19, HIV, Hepatis), bacteria (TB, Cholera, Typhoid, Pneumonia, Plague, Diphtheria, *Ecoli* infections), Protozoans (Malaria, Leishmaniasis and Amebiasis).Common types of fungal infections (ringworm, yeast infection). Case studies.

Module-5 (8 hours)

ENVIRONMENT AND INDUSTRIAL MICROBIOLOGY:

Aerobiology, Air sampling techniques. Microbiology of potable water and wastewater treatment. Microbiology of soil, Beneficial Microbes, Biofertilizers, VAM, Rhizobium. Microbes in Bioremediation. Case studies. Industrially important microbes: Enzymes, SCP production, Penicillin, vitamin B12 and Glutamate production.

Course outcomes (Course Skill Set)

At the end of the course the student will be able to:

- Correlate the structure, function and metabolic pathways of microorganisms.
- Apply the principles of microbial culture for identifying the appropriate technique used in culture and characterization of microorganisms under aseptic conditions.
- Analyze the role of microorganisms in environmental protection, industrial applications and infectious diseases.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50)in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

Continuous Internal Evaluation:

Three Unit Tests each of **20 Marks (duration 01 hour)**

- First test at the end of 5th week of the semester
- Second test at the end of the 10th week of the semester
- Third test at the end of the 15th week of the semester

Two assignments each of **10 Marks**

- First assignment at the end of 4th week of the semester
- Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

- At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject **(duration 03 hours)**

- The question paper will have ten questions. Each question is set for 20 marks.
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.

The students have to answer 5 full questions, selecting one full question from each module.

Suggested Learning Resources:

- General Microbiology: Roger Y Stanier, John L Ingraham, and Mark L Wheels Macmillan Press Ltd, V Edition (International Edition). 1999.
- Ananthanarayanand Paniker, Textbook of Microbiology. Orient Blackswan, 2006.
- Microbiology Michael J Pelczar, J R Chan ECS, Noel R Krieg Tata McGraw-Hill Education Pvt. 2013.
- Harley, Klein. Microbiology Prescott, McGraw Hill Seventh Edition.1996.
- Industrial Microbiology, Prescott and Dunn. CBS Pub. 4th Edition, 2004.
- Black J, Microbiology: Principles and Explorations, 7th Edn. John Wiley and Sons, USA. 2010.

Web links and Video Lectures (e-Resources):

- VTU EDUSAT / SWAYAM / NPTEL / MOOCS / Coursera / MIT-open learning resource
- https://www.udemy.com/course/basics-of-medical-microbiology/
- https://www.edx.org/learn/microbiology
- https://www.coursera.org/courses?query=microbiology
- https://www.futurelearn.com/courses/introduction-to-microbiology
- https://alison.com/course/introduction-to-microbiology
- e- books:
  http://books.pakchem.net/microbiology-books.html
  http://www.austincc.edu/rohde/noteref.htm

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Demos in classes (by groups of students)
- AV presentation by students (on topics as per choice of the teacher)
- Collection of case studies on topics covered with contamination, pandemic and allied
- Group Discussions on recent advancements

MICROBIOLOGY LAB			
Course Code	21BTL35	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:1:2:0	SEE Marks	50
Credits	01	Exam Hours	03

Course objectives:

- To develop ability to use basic instruments in the microbiology lab
- To prepare required media and sterile the glassware for culturing microbes
- To be able to characterize and enumerate different microorganisms
- To analyse the bacterial growth curves and phases of growth
- To isolate and study the microbes from various sources in day-today life

Sl.NO	EXPERIMENTS
1	Study of Lab Instruments (Autoclave, Hot air oven, Incubator, LAF, microfuge/centrifuge) and Observation of bacterial (prokaryotic) and fungal (eukaryotic) specimen under 10x, 40 x microscopes
2	Media preparation, plugging and sterilization (media, Petri plates and tubes), Plating techniques (Serial dilution, streak, pour and spread - plates)
3	Morphological characterization, Enumeration of microbes (Plate count, haemocytometer), size determination using micrometry.
4	Staining techniques I: Gram staining, Capsule staining, and endospore staining
5	Staining techniques II: Acid Fast Staining, Flagella staining and Fungal staining
6	Characterization of bacteria by Biochemical Tests: IMViC, Starch hydrolysis, carbohydrate fermentation, Catalase, Urease, hydrogen sulphide, Gelatin Liquifaction.
7	Growth of microbes (Static and shake flask conditions), Growth curve studies
8	Bacterial motility studies
9	Isolation and identification of actinomycetes and rhizobium
10	Isolation and identification of microorganisms from air, water & soil
11	Antibiotic susceptibility test of a selected bacterium
12	Microbial quality assessment of milk and water

Course outcomes (Course Skill Set)

At the end of the course the student will be able to:

- Apply the theoretical knowledge and execute experiments pertaining to methods of sterilization, microbial identification and characterization.
- Apply the basic techniques of Microbiology in various experiments related to Agriculture, Food and Environment.
- Analyze the relationship of microbes with human health.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

CBCS SCHEME

USN | 1 | 8 | G | 1 | 9 | B | T | 0 | 2 | 3 |

18BT54

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022
Genomics and Proteomics

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Describe the relevance of Genomic databases related to model organisms. Substantiate their applications in Genomics studies. **(10 Marks)**

b. Define the terms Genes , Genomics , Proteomes , Geonomics and Proteomics. Explain the central dogma of Molecular Biology in brief. **(10 Marks)**

OR

2 a. Give detailed account of Sangers Dideoxy method of DNA sequencing. **(08 Marks)**

b. What are the challenges faced by the shot gun approach to sequence DNA from a limited source? **(07 Marks)**

c. Sample 1 : AT GCG [G] TA CGAT ; Sample 2 : AT GCG [C] TA CGAT

How is the above substitution classified? Substantiate the possible effects of such mutations. **(05 Marks)**

Module-2

3 a. What as ESTs? Elaborate its applications in Genomics. **(10 Marks)**

b. Define Genotyping. Explain how DNA chips are used for genotyping. **(10 Marks)**

OR

4 a. What are Mutations? Explain the different types of chromosomal and Gene mutation, with examples. **(08 Marks)**

b. Write a note on Comparative Genomics. **(06 Marks)**

c. Give at least 3 applications of SNPs. **(06 Marks)**

Module-3

5 a. Explain the organization of Genomes within the nucleus. **(09 Marks)**

b. Differentiate the salient aspects of gene regulation process in Prokaryotes and Eukaryotes. **(06 Marks)**

c. Write a note on the Cvalue paradox. **(05 Marks)**

OR

6 a. Elaborate on SiRNA and its applications in various fields. **(12 Marks)**

b. Write a note on the importance of various Post Translational Modifications in Eukaryotes. **(08 Marks)**

Module-4

7 Highlight the applications of the following Techniques with examples :

a. RFLP.

b. AFLP.

c. SCAR.

d. Telomerase as molecular markers. **(20 Marks)**

CBCS SCHEME

USN 1SG20BT056 18BT32

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Microbiology

Time: 3 hrs. Max. Marks: 100

Note: Answer any *FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Define Microbiology. Write a note on scope of Microbiology. (10 Marks)
b. Explain structure, classification and reproduction of Fungi in detail. (10 Marks)

OR

2 a. Define taxonomy. What are the various criteria used to classify bacteria? (10 Marks)
b. What are the contributions of Robert Koch and Louis Pasteur in the field of Microbiology? (10 Marks)

Module-2

3 a. What is pure culture technique? Explain the methods of isolation of a pure culture. (10 Marks)
b. Define Staining techniques. Distinguish between gram staining and acid fast staining. Add a note on its application. (10 Marks)

OR

4 a. Explain the principle, construction and application of phase contrast microscope. (10 Marks)
b. Define sterilization. Explain the working principle and applications of Autoclave and Hot air oven. (10 Marks)

Module-3

5 a. Explain the fate of pyruvate under anaerobic conditions. Explain with pathways. (10 Marks)
b. Write explanatory note on Primary and Secondary metabolites with examples. (10 Marks)

OR

6 a. Explain the EMP pathway and Bioenergetics of it. (10 Marks)
b. Define growth curve. How will the growth curve pattern of E-coli change when the medium is supplemented with both glucose and lactose? Justify your answer. (10 Marks)

Module-4

7 a. Write a note on :
(i) Diphtheria (ii) Gonorrhea (10 Marks)
b. Explain the pathogenecity of mycobacterium leprae. Add a note on the diagnosis of Leprosy. (10 Marks)

OR

8 a. Write a note on:
(i) Rabies (ii) SARS (10 Marks)
b. Give an account of the disease pathway of Syphilis and Plague. (10 Marks)

Module-5

9 a. Define Biogeochemical cycle. Explain Nitrogen and Sulphur cycle. (10 Marks)
b. Explain with relevant examples, the role of microorganisms as biofertilizers. (10 Marks)

OR

10 a. Explain enzyme production from microbes. Explain production of Vitamin B12. (10 Marks)
b. Write explanatory note on:
(i) VAM (ii) Rhizobium. (10 Marks)

* * * * *

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Academic Calendar for ODD Semester of UG programs for the year 2022-23

	I semester B.E./B.Tech.	I semester B.Arch./B.Plan	I semester B.Sc.	III semester B.E./ B.Tech.	III Semester B.Arch.	III semester B. Plan	III Semester B.Sc.	V Semester B.E./B.Tech.	V Semester B.Arch./ B.Plan.	VII semester B.E./B.Tech.	VII semester B.Plan.	VII semester B.Arch	IX semester B.Arch
mmencement of DD Semester	# 10.10.2022	# 10.10.2022	10.10.2022 (Tentative)	11.10.2022	31.10.2022	31.10.2022	10.10.2022	10.10.2022	12.09.2022	21.08.2022	21.08.2022	19.09.2022	01.09.2022
Internship				11.10.2022 To 30.10.2022						21.08.2022 To 17.09.2022	21.08.2022 To 24.09.2022		
my of L				31.10.2022	31.10.2022	31.10.2022	10.10.2022	10.10.2022	12.09.2022	19.09.2022	26.09.2022	19.09.2022	01.09.2022
ast Working day of ODD Semester				11.02.2023	11.02.2023	11.02.2023	28.01.2023	27.01.2023	31.12.2022	31.12.2022	07.01.2023	31.12.2022	20.12.2022
Practical Examination				13.02.2023 To 21.02.2023	13.02.2023 To 21.02.2023	13.02.2023 To 21.02.2023	01.02.2023 To 09.02.2023	30.01.2023 To 09.02.2023	03.01.2023 To 13.01.2023	03.01.2023 To 13.01.2023	09.01.2023 To 14.01.2023	03.01.2023 To 13.01.2023	21.12.2022 To 31.12.2022
Theory xaminations				22.02.2023 To 22.03.2023	22.02.2023 To 22.03.2023	22.02.2023 To 22.03.2023	13.02.2023 To 03.03.2023	13.02.2023 To 18.03.2023	16.01.2023 To 15.02.2023	16.01.2023 To 15.02.2023	16.01.2023 To 15.02.2023	16.01.2023 To 15.02.2023	-----
Internship			*	26.03.2023 To 16.04.2023	---	---		---	---		---		---
Internship Voce/ Project viva				---	---	---		---	---	---	---		---
mmencement VEN Semester				17.04.2023	17.04.2023	17.04.2023	20.03.2023	20.03.2023	20.03.2023	20.02.2023	20.02.2023	20.02.2023	06.01.2023

ase Note:

- The academic sessions for ODD semesters should commence from the dates mentioned above. # Commencement of Induction Program As per AICTE Academic Calendar 2022-23
- The commencement date of VII semester B.E./B.Tech/, is postponed from 12.09.2022 to 19.09.2022 to cover 04 weeks of Internship duration. The students of B.E./B.Tech., compulsorily have to complete the Internship in this duration only.
- The commencement date of VII semester B.Plan., is postponed from 12.09.2022 to 26.09.2022 to cover 06 weeks of Internship duration.
- Students joining to VII semester B.E./B.Tech/B.Plan should complete the Internship before the commencement of the classes.
- The Institute needs to function for six days a week with additional hours (Saturday is a full working day). #If required, the college can also plan to have extra classes on Sundays to complete academic activities within the duration mentioned.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Notifi n regarding the Calendar of Events relating to the conduct of University Examinations will be issued by the Registrar (Evaluation) from time to time.
- / Calendar may be modified based on guidelines/directions issued in the future by MHRD/UGC/AICTE/State Government.
- Calendar is also applicable for Autonomous Colleges. If any changes are to be effected by Autonomous Colleges in the academic terms and examination schedule, they could do so with the approval of t iversity.
- The college has to conduct offline classes to cover 80% of the syllabus of the courses; however, 20% of the syllabus can be covered in virtual model (Online) mode. Attendance of the students for offline and online classes is mandatory and records should be maintained and submitted to the university whenever informed.
- If any clarification/correction, please email to-sbhvtuso@gmail.com

Internship for Lateral Entry Students

03/09/2022
REGISTRAR
3/9/22

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

F-ADN-03/R0

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade, and NBA Accredited)

14/5, Chikkasandra, Hesaraghatta Main Road, BENGALURU-560057

Calendar of Events ODD semester for AY: 2022-23 (3rd Semester)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events (Higher semesters)
October 2022						1	2	02 : Gandhi Jayanthi 04 : Ayudha Pooja 05 : Vijayadashami 24 : Naraka Chathudashi 26 : Balipadyami 31 : Commencement of 3rd Semester classes
	3	4	5	6	7	8	9	
	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	
	24	25	26	27	28	29	30	
	31							
Novemb 2022		1	2	3	4	5	6	01 : Kannada Rajthosthava 08 : Kanakadasa Jayanthi 28 – 30 : IA Test-I
	7	8	9	10	11	12	13	
	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	
	28	29	30					
December 2022				1	2	3	4	03: Proctor report-I 10: PTM-1 25 : Christmas 23 - 30: IA Test-II
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	
	26	27	28	29	30	31		
Janua 202							1	07: Mini Project Exhibition Day 04: Proctor report-II 14: PTM-2 15: Makara Sakranti 30 - 31: IA Test-III
	2	3	4	5	6	7	8	
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	
	23	24	25	26	27	28	29	
	30	31						
February 2023			1	2	3	4	5	01 : IA Test-III 08 - 10: IA Test-IV 13 : Proctor report-III 17 : Last Working Day (3rd Sem) VTU Lab Exam: 13/02/2023 to 21/02/2023. VTU Theory Exams: 22/02/2023 to 22/03/2023. Internship: 26-03-2023 to 16-04-2023.
	6	7	8	9	10	11	12	
	13	14	15	16	17	18	19	
	20	21	22	23	24	25	26	
	27	28						

Total number of working days in ODD semester: 90 days

Commencement of EVEN semester for AY 2022-23: 17/04/2023

Dr. B.S. KRISHNA
Professor & Head

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI College of Engineering

SAPTHAGIRI COLLEGE OF ENGINEERING

F-ADN-03/R0

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade and NBA Accredited)

14/5, Chikkasandra, Hesaraghatta Main Road, BENGALURU-560057

Calendar of Events ODD semester for AY: 2022-23 (5th Semester)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events (Higher semesters)
October 2022						1	2	02 : Gandhi Jayanthi 04: Ayudha Pooja 05: Vijayadashami 10 : Commencement of 5th Semester classes 24 : Naraka Chathudashi 26 : Balipadyami
	3	4	5	6	7	8	9	
	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	
	24	25	26	27	28	29	30	
	31							
November 2022		1	2	3	4	5	6	01: Kannada Rajthosthava 1: Kanakadasa Jayanthi 14 – 16 : IA Test-I 24: Proctor report-I 26: PTM-1
	7	8	9	10	11	12	13	
	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	
	28	29	30					
December 2022				1	2	3	4	15 - 17: IA Test-II 25 : Christmas 29: Proctor report-III 31: PTM-2
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	
	26	27	28	29	30	31		
January 2023							1	07: Mini Project Exhibition Day 15: Makara Sakranti 16 - 18: IA Test-III 19 - 21: Lab IA Test 23 - 25: IA Test-IV 27: Last Working Day (5th Sem)
	2	3	4	5	6	7	8	
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	
	23	24	25	26	27	28	29	
	30	31						
February 2023			1	2	3	4	5	VTU Lab Exam: 30/01/2023 - 09/02/2023 VTU Theory Exams: 13/02/2023 - 18/03/2023
	6	7	8	9	10	11	12	
	13	14	15	16	17	18	19	
	20	21	22	23	24	25	26	
	27	28						

Total number of working days in ODD semester: 92 days

Commencement of EVEN semester for AY 2022-23: 20/03/2023

Dr. B.S. KRISHNA
Professor & Head
Department of Chemistry
Sapthagiri College of Engineering

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

F-ADN-03/R0

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade, and NBA Accredited)

14/5, Chikkasandra, Hesaraghatta Main Road, BENGALURU-560057

Calendar of Events ODD semester for AY: 2022-23 (7th Semester)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events (Higher semesters)
September 2022				1	2	3	4	
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	19 : Commencement of 7th Semester classes
	26	27	28	29	30			
October 2022						1	2	02 : Gandhi Jayanthi
	3	4	5	6	7	8	9	04: Ayudha Pooja
	10	11	12	13	14	15	16	05: Vijayadashami
	17	18	19	20	21	22	23	20 – 22 : IA Test-I
	24	25	26	27	28	29	30	24 Naraka Chathudashi
	31							26 Balipadyami
								27: Proctor report-I
								29: PTM-1
November 2022		1	2	3	4	5	6	01: Kannada Rajthosthava
	7	8	9	10	11	12	13	11 Kanakadasa Jayanthi
	14	15	16	17	18	19	20	14 - 16: IA Test-II
	21	22	23	24	25	26	27	24 Proctor report-II
	28	29	30					
December 2022				1	2	3	4	03: Mini Project Exhibition Day
	5	6	7	8	9	10	11	10: PTM-2
	12	13	14	15	16	17	18	19 - 21: IA Test-III
	19	20	21	22	23	24	25	25 - 26: Lab IA Test
	26	27	28	29	30	31		26 - 28: IA Test-IV
								25 : Christmas
								30: Proctor report-III
								31: Last Working Day (7th Sem)
January 2023							1	
	2	3	4	5	6	7	8	15 : Makara Sakranti
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	VTU Lab Exam: 03/01/2023 - 13/01/2023
	23	24	25	26	27	28	29	VTU Theory Exams: 16/01/2023 - 15/02/2023
	30	31						

Total number of working days in ODD semester: 90 days

Commencement of EVEN semester for AY 2022-23: 20/02/2023

Dr. B.S. KRISHNA

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

F-ADN-03/R0

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade)

14/5, Chikkasandra, Hesaraghatta Main Road, BENGALURU-560057

DEPARTMENT OF BIOTECHNOLOGY

Calendar of Events ODD semester for AY: 2022-23 (7th, 5th & 3rd Semester)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events (Higher semesters)
September 2022				1	2	3	4	19 : Commencement of 7th Semester classes
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	
	26	27	28	29	30			
October 2022						1	2	02 : Gandhi Jayanthi 04: Ayudha Pooja 05: Vijayadashami 10 : Commencement of 5th Semester classes 17-21-Certification Course 20 – 22 : IA Test-I(7th sem) 25:Webinar 24 : Naraka Chathudashi 26 : Balipadyami 27: Proctor report-I 28:World Student Day 29: PTM-1(7th sem) 31 : Commencement of 3rd Semester classes
	3	4	5	6	7	8	9	
	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	
	24	25	26	27	28	29	30	
	31							
November 2022		1	2	3	4	5	6	01: Kannada Rajthosthava 04:Skill development Programme 05:Krushi mela 10:Industrial Visit 11: Kanakadasa Jayanthi 14 - 16: IA Test-I (5th sem) 14 - 16: IA Test-II(7th sem) 19:Webinar 21-23:Workshop 24:Model exhibition(5th sem) 24: Proctor report-II 25:Industrial Visit 26: PTM-1(5th sem) 28:National Education Day 28 – 30 : IA Test-I(3rd Sem)
	7	8	9	10	11	12	13	
	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	
	28	29	30					
December 2022				1	2	3	4	02:Webinar 03: Mini Project Exhibition Day 03: Proctor report-I(3rd sem) 10: PTM-2 (5th sem) 10: PTM-1 (3rd sem) 12:Alumni Talk 15 - 17: IA Test-II(5th Sem) 19 - 21: IA Test-III(7th sem) 22 - 24: Lab IA Test(7th sem)
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	

Head of the Department
HOD, BT
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

F-ADN-03/R0

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(Accredited by NAAC with "A" Grade)

14/5, Chikkasandra, Hesaraghatta Main Road, BENGALURU-560057

DEPARTMENT OF BIOTECHNOLOGY

	26	27	28	29	30	31		23:Industrial Visit 26 - 28: IA Test-IV(7th sem) 25 : Christmas 28 - 30: IA Test-II(3rd sem) 29: Proctor report-II(5th sem) 30: Proctor report-III(7th sem) 30:Seminar 31: Last Working Day (7th Sem)
January 2023							1	04: Proctor report-II (3rd sem) 6:Alumni Talk 07: Mini Project Exhibition Day 9-13:Hands on training 14: PTM-2 16 - 18: IA Test-III(5th sem) 9/01/2023 to 13/1/2023:Hands on Training 15: Makara Sakranti 16 - 18: IA Test-III 19 - 21: Lab IA Test(5th sem) 21:Webinar 23 - 25: IA Test-IV 27: Last Working Day (5th Sem) 28:Seminar 30 - 31: IA Test-III VTU Lab Exam : 03/01/2023 - 13/01/2023(7th sem) VTU Theory Exams: 16/01/2023 - 15/02/2023(7th sem)
	2	3	4	5	6	7	8	
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	
	23	24	25	26	27	28	29	
	30	31						
February 2023			1	2	3	4	5	01: IA Test-III (3rd sem) 02 - 04: Lab IA Test(3rd sem) 6-11:FDP 08 - 10: IA Test-IV 11: Proctor report-III 11: Last Working Day (3rd Sem) VTU Lab Exam: 13/02/2023 to 21/02/2023.(3rd sem) VTU Theory Exams: 22/02/2023 to 22/03/2023.(3rd sem) Internship: 26-03-2023 to 16-04-2023.(3rd sem) VTU Lab Exam: 30/01/2023 - 09/02/2023(5th sem) VTU Theory Exams: 13/02/2023 - 18/03/2023(5th sem)
	6	7	8	9	10	11	12	
	13	14	15	16	17	18	19	
	20	21	22	23	24	25	26	
	27	28						

Total number of working days in ODD semester: 92 days
Commencement of EVEN semester for AY 2022-23: 20/02/2023(8th sem)
Commencement of EVEN semester for AY 2022-23: 20/03/2023(6th sem)
Commencement of EVEN semester for AY 2022-23: 17/04/2023(4th sem)

Head of the Department
Dept. of BTechnology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING, BANGALORE – 57

(Affiliated to VTU, Belagavi. and Recognized by AICTE, New Delhi)
(ISO: 9001-2015 and ISO: 14001-2015 certified, NAAC accredited with A Grade)

F-ADM-02/RO

DEPARTMENT OF BIOTECHNOLOGY

TIME TABLE - ACADEMIC YEAR 2022-2023 -ODD SEM

OVERALL CLASS TIME TABLE

TIME /DAY	SEM	8:30-9:30	9:30-10:30	10:30-10:50	10:50-11:50	11:50-12:50	12:50-01:45	01:45-02:40	02:40-03:35	03:35-04:30
MON	III	21MAT31	21BT32-KMV	Short Break	21BT383-GM	21BT33-VSM	Lunch Break	Tutorial Classes		
	V	18BT53-SG	18BT51-AHV		18BT56-RDL	18BT54-CS		ET/GE Lab- B1/B2		
	VII	18BT72-CBS	18BT732-AE		18BT742-SG	18BT71-KMV		Technical Training-GD/Mock interview/Aptitude		
TUE	III	21BT34-CS	21MAT31	Short Break	21BT33- VSM	21BT383-GM		UO/MB Lab- B2/B1		
	V	18BT51-AHV	18BT55-CBS		18BT54-CS	18BT56-RDL		ENV-CV	18BT52-AE	------
	VII	18BT732-AE	18BT742-SG		18BT71- KMV	18BT72- CBS		BPE Lab- AE/GNV- B1// Technical Training- B2		
WED	III	21BT32-KMV	21MAT31		21BT34-CS	----		Tutorial Classes		
	V	18BT51-AHV	ET/GE Lab -B2/B1					18BT53-SG	18BT55-CBS	
	VII	18BT752-OE	18BT72-CBS		18BT732-AE	18BT71-KMV		BPE Lab- AE/GNV B2/ Technical Training B1		
THU	III	21UH36-GM	21BT33- VSM		21BT32-KMV	21BT34-CS		BC/MB LabB1/B2		
	V	18BT52-AE	18BT54-CS	Short Break	18BT53-SG	18BT55-CBS		Tutorial Classes		
	VII	18BT71-KMV	18BT72-CBS		18BT752-OE	---		Project		
FRI	III	21CIP37	21MAT31		Technical training			BC/UO Lab -B2/B1		
	V	18BT55-CBS	18BT52-AE		Technical training			18BT56-RDL	18BT54-CS	
	VII	18BT752-OE	18BT742-SG		Technical Training			Project		
SAT	III	21BT32-KMV	21BT33-VSM	Short Break	21BT34- CS	----				
	V	18BT53-SG	18BT51-AHV		18BT56-RDL	18BT52-AE				
	VII	18BT752-OE	18BT732-AE		18BT742- SG	-------				

Time Table Coordinator

HOD, BT

Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta M Road

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING, BANGALORE – 57

(Affiliated to VTU, Belagavi, and Recognized by AICTE. New Delhi)

(ISO: 9001-2015 and ISO: 14001-2015 certified, NAAC accredited with A Grade)

14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057

DEPARTMENT OF BIOTECHNOLOGY

TIME TABLE - ACADEMIC YEAR 2022-2023 –ODD SEM

F-ADM-02/RO

INDIVIDUAL TIME TABLE –Dr Soumya C							Lecture Hall : CLH 209/208 (Academic Block)		
Class Teacher Name									
			Mobile : 9538819506			Email : : sowmyac@sapthagiri.edu.in			
PERIOD	1	2		3	4		5	6	7
TIME DAY	8:30 - 9:30	9:30 - 10:30	10:30 - 10:50	10:50 - 11:50	11:50 - 12:50PM	12:50 - 01:45	01:45 - 02:40	02:40 - 03:35	03:35 - 04:30
MON			Short Break		18BT54- G&P	Lunch Break (55 minutes)			
TUE	21BT34-MB			18BT54- G&P			MB Lab		
WED				21BT34-MB					
THU		18BT54- G&P			21BT34-MB		MB Lab		
FRI								18BT54- G&P	
SAT				21BT34-MB					

Subjects Allocation

Sl.No	Subject Code	Subject Title	Subject Abbreviation
1	18BT54	Genomics & Proteomics	G&P
2	21BT34	Microbiology	MB
3	21BTL35	Microbiology lab	MB Lab

Time Table Coordinator

HOD / BT

Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road

Sri Srinivasa Educational & Charitable Trust

SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to VTU, Belagavi, and Recognized by AICTE, New Delhi)
(ISO: 9001-2015 and ISO: 14001-2015 certified, NAAC accredited with A Grade)
14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057

Department of Biotechnology

Course	GENOMICS AND PROTEOMICS				Course code		18BT54
Faculty	Dr.SOUMYA.C				Semester		5
Core/Elective	Contact Hours /week			Total Hours	Assessment		Credits
Core	L	T	P	50	CIE	SEE	4
	4	-	-		40	60	

Period	Planned Date	Topic Planned	Actual Date	Topic covered	Remarks
1	10/10/22	Module 1: Genes and Proteins	10/10/22	Gene & protein	
2	12/10/22	Polymorphisms – types of polymorphism	12/10/22	polymorphism	
3	13/10/22	RFLP	13/10/22	RFLP	
4	14/10/22	STR, VNTRs	14/10/22	STR, VNTRs	
5	17/10/22	SNPs	17/10/22	SNPs	
6	19/10/22	Extraction of DNA	19/10/22	Extraction of DNA	
7	20/10/22	Methods of preparing genomic DNA for sequencing	20/10/22	method of prepair DNA	
8	21/10/22	DNA sequence analysis methods	21/10/22	DNA sequence Analysis	
9	27/10/22	Maxam& Gilbert Method	27/10/22	Maxam & Gilbert method	
10	28/10/22	Sanger Di-deoxy method	28/10/22	Sanger dideoxy	
11	31/10/22	Fluorescence method	7/11/22	fluorescence method	CIA
12	2/11/22	Shot-gun approach	8/11/22	Shot-gun approach	
13	3/11/22	NGS – different methods and principles	9/11/22	NGS - different	
14	4/11/22	Illumina sequencing	10/11/22	Illumina sequencing	

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

15	7/11/22	Pyrosequencing	18/11/22	pyrosequencing	
16	9/11/22	Solid Sequencing	21/11/22	Solid sequ	
17	10/11/22	Ion torrent sequencing	21/11/22	Ion torrent sequencing.	
18	17/11/22	Module 2: Expressed sequenced tags (ESTs)	22/11/22	ESTs	
19	18/11/22	Gene variation and Single Nucleotide Polymorphisms (SNPs)	24/11/22	SNPs	
20	21/11/22	Gene disease association, diagnostic genes and drug targets,	25/11/22	Gene disease association	
21	23/11/22	Genotyping tools - DNA Chips, Diagnostic assays, diagnostic services	28/11/22	Genotyping tool - DNA chips	
22	24/11/22	Functional genomic studies with model systems such as Drosophila, Yeast or C. elegans.	29/11/22	Functional genomics C. elegans	
23	25/11/22	Genome projects on E.coli., Arabidopsis	1/12/22	Genome project E.coli Arabidopsis	
24	28/11/22	Genome projects on rice;	2/12/22	Genome project on Rice	
25	30/11/22	Human genome Project and the genetic map.	6/12/22	Human Genome project	
26	01/12/22	Module 3: GENOME MANAGEMENT: Cell differentiation and gene	7/12/22	Genome Management	
27	01/12/22	C-Values of genomes.	8/12/22	C-values of genomes	

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

28	02/12/22	General architecture of prokaryotic and eukaryotic genome.	12/12/22	General Architecture of prokaryote, eukaryote
29	05/12/22	Organization of eukaryotic genome within the nucleus, chloroplast and mitochondria.	13/12/22	Organisation of Nucleus chloroplast & Mitoch.
30	07/12/22	Regulation of transcription,	19/12/22	Regulation of transcription
31	08/12/22	Transcription factors and the co-ordination of gene expression.	26/12/22	Transcription factors.
32	09/12/22	Interference RNA, RNA silencing, SiRNA: Applications in Functional genomics,	27/12/22	Interference RNA. Si RNA.
33	12/12/22	Medicine and Gene Knockdown. Gene Editing -Crispr Cas9	28/12/22	Gene knockdown
34	14/12/22	Module 3- GENOME ANALYSIS : Molecular markers - RFLP, RAPD,	29/12/22	Molecular Marker
35	19/12/22	AFLP, SCAR,	30/01/23	AFLP, SCAR
36	21/12/22	CAPS, microsatellites	2/1/23	CAPS, Microsatellite
37	22/12/22	SNPs.	3/1/23	SNPs
38	23/12/22	Methods of molecular mapping,	4/1/23	Method of Molecular mapping
39	26/12/22	Marker assisted selection. Map-based cloning,	5/1/24	Marker Assisted selection
40	28/12/22	T-DNA and transposon tagging.	10/1/23	T-DNA & transposon tagging
41	29/12/22	Differential display via RT-PCR.	12/1/23	DD RTPCR
42	30/12/22	Micro-array in functional Genomics. Bioinformatics analysis – clustering methods.	13/1/23	Microarray in functional genomics.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

43	02/01/23	FISH - DNA amplification markers; Telomerase as Molecular markers. STS mapping.	19/1/23	FISH - DNA amplificats	
44	04/01/23	PROTEOMICS : Introduction to proteins, Large scale preparation of proteins, peptides,	20/1/23	Proteomics - Large scale product	
45	05/01/23	Mass-spec based analysis of protein	23/1/23	Mass Spec	
46	06/01/23	Two hybrid interaction screens.	25/1/23	Two hybrid Screen	
47	09/01/23	"Protein Chip" - interactions and detection techniques.	30/1/23	Protein chip	
48	11/01/23	Two dimensional PAGE for proteome analysis,	30/1/23	2D - GEL	CL
49	12/01/23	Detection of proteins on SDS gels,	Note:	SDS page	
50	13/01/23	Protein cleavage, Edman protein micro sequencing,	Note:	protein cleavage.	
51	26/01/23	Automation in proteomics, Applications of proteome analysis to drug development and toxicology,	Note given	Automat in proteomics	CL
52	28/01/23	Phage antibodies as tools for proteomics.	Note given.	Phage Antibodies.	

Signature of faculty

Signature of HOD

Signature of Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesa... Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY:2022-2023

2022-ODD

21BT34- MICROBIOLOGY

TEACHERS DAIRY

Course	Microbiology				Course code		21BT34
Faculty	Dr Soumya C				Semester		3
Core/Elective	Contact Hours /week			Total Hours	Assessment		Credits
Core	L	T	P	50	CIE	SEE	04
	4	-	-		50	50	

TEACHERS DAIRY

Period No	Actual Dates planned	Topic Planned	Dates	Topic Covered	Remarks
1	2/11/22	**Module 1- Introduction to microorganisms** Scope and History of microbiology (Milestone contributions from scientists)	2/11/22	Scope & History	
2	3/11/22	Scope and History of microbiology (Milestone contributions from scientists)	3/11/22	Contibution	
3	4/11/22	Origin of life-: Archaea, Prokaryotes	3/11/22	Origin of life	
4	8/11/22	Origin of life-: Eukaryotes	4/11/22	Eukaryotes	
5	911/22	Microbial Diversity and Taxonomy	8/11/22	Taxonomy	
6	10/11/22	Structure, Classification	9/11/22	Structure classification	

Signature of Staff HOD, BT Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

		and Reproduction of bacteria, Fungi			
7	**15/11/22**	Structure, Classification and Reproduction of Viruses, Protozoa and Algae.	10/11/22	class, feat of virus	
8	**16/11/22**	Structure, Classification and Reproduction of Algae	15/11/22	Reproduct	
9	**17/11/22**	General features of Prions, Spirochetes, Actinomycetes,	16/11/22	General feat	
10	**18/11/22**	Rickettsiae and Mycoplasma	17/11/22	Rickettsiae	
11	**22/11/22**	**Module 2- Methods and techniques in microbiology** Microscopy: Concepts, Light Microscopy	18/11/22	Microscopy	
12	**23/11/22**	Electron Microscopy	19/11/22	Electron	
13	**24/11/22**	Phase Contrast, Acoustic Microscopy	19/11/22	phase contrast	
14	**25/11/22**	camera Lucida and Micrometry	22/11/22	Camera Lucida	
15	**1/12/22**	Media preparation, types of media	24/11/22	Media preparation	

Signature of Staff HOD, BT Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY:2022-2023

2022-ODD

21BT34- MICROBIOLOGY

16	2/12/22	Culture methods, pure culture techniques	26/11/22	Culture method	
17	6/12/22	Differential Staining Techniques	01/12/22	Differential stain	
18	7/12/22	Differential Staining Techniques	3/12/22	& Staining	
19	8/12/22	Sterilization and disinfection	6/12/22	Sterilization	
20	9/12/22	Sterilization &disinfection	7/12/22	disinfectn	
21	13/12/22	**Module 3- Microbial growth and metabolism** Growth curve patterns	8/12/22	Growth curve	
22	14/12/22	Physical conditions required for growth.	9/12/22	Physical conditn	
23	15/12/22	Metabolism; Primary metabolites with examples	10/12/22	Metabolism primary	
24	16/12/22	Secondary metabolites with examples	13/12/22	Secondary	
25	20/12/22	metabolic pathways important in Microorganisms- Respiration	14/12/22	Metabolic pathway	

Signature of Staff HOD, BT Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

26	21/12/22	metabolic pathways important in Microorganisms- Respiration	15/12/22	Respiration	
27	23/12/22	metabolic pathways important in Microorganisms- Respiration	16/12/22	Respiration	
28	27/12/22	metabolic pathways important in Microorganisms- Respiration	17/12/22	Respiration	
29	3/01/23	Fermentation,	20/12/22	fermentation	
30	4/01/23	**Module 4- Medical microbiology** Introduction to Medical Microbiology, Common diseases caused by microbes:	21/12/22	disease & Micro gas	
31	5/01/23	Bacterial diseases: Typhoid, Diphtheria	21/12/22	Typhoid Diptheria	
32	6/01/23	Cholera, Tuberculosis	22/12/22	cholera, tuberculo	
33	10/01/23	Leprosy, Plague, Syphilis,	24/12/22	Lepro17, Plag	
34	11/01/23	Gonorrhea, Viral	27/12/22.	Viral disease	

Signature of Staff HOD, BT Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

		diseases: Herpes		Happy	
35	12/01/23	Polio, Hepatitis	3/1/23	polio, Hepatitis	
36	13/01/23	AIDS, Rabies	4/1/23	AIDS, Rabies	
37	17/01/23	SARS and H1N1	9/1/23	SARS & H1N1	
38	18/01/23	Protozoan diseases: Malaria	6/1/23	protozoan dis	
39	19/01/23	common types of fungal infections	10/1/23	fungal infn	
40	20/01/23	**Module 5- Air, water and soil microbiology** Soil Microbiology: Role of microbes and soil fertility	11/1/23 25/1/23 27/1/23	Soil microb	
41	24/01/23	Biogeochemical cycles	12/1/23 31/1/23	Biogeochemical cycle	
42	25/01/23	Bio fertilizers, VAM, Rhizobium, Azotobacter	13/1/23 1/2/23	Biofertilizer	
43	26/01/23	Air sampling techniques and commonly found atmospheric microbe profile	17/1/23 2/2/23 3/2/23	Air sampling devices	
44	27/01/23	Water sampling techniques	23/1/23 1/2/23	Water sampling	
45	7/02/23	commonly found atmospheric microbe profile	5/2/23 24/1/23 8/2/23 9/2/23	Atm. microbes	

Signature of Staff HOD, BT Principal

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57

(Affiliated to VTU, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY 2022-23 ODD

DEPARTMENT OF BIOTECHNOLOGY

Sub: Microbiology Lab **Sub Code: 21BTL35** **Sem : III** **Batch: I**

Staff Incharge: Dr.Soumya C/Dr.Gouri Mirji **No Of Students: 23**

Sl No	Name of the student	USN
1	AISHWARYA LOMTE	1SG21BT001
2	AKASH V DESAI	1SG21BT002
3	AKSHITHA S	1SG21BT003
4	ANJANA G	1SG21BT004
5	ANUSHA H P	1SG21BT005
6	ANUSHA N RAJU	1SG21BT006
7	BINDHUSHREE A	1SG21BT007
8	CHAITRA P	1SG21BT008
9	DARSHAN P	1SG21BT009
10	DEEKSHITH GOWDA	1SG21BT010
11	DEEPTHI	1SG21BT011
12	G PALLAVI	1SG21BT012
13	GUNASHREE S	1SG21BT013
14	HEMANTH KUMAR D	1SG21BT014
15	HEMANTH KUMAR T	1SG21BT015
16	JANAVI R	1SG21BT016
17	KAVANA K O	1SG21BT017
18	KRISHNA TEJA	1SG21BT018
19	LAKSHMINARASIMHA C	1SG21BT019
20	LAXMI KASHAPPA GADAGIN	1SG21BT020
21	LEONDER RAFFAEL CLEMENTS	1SG21BT021
22	MADHURA H K	1SG21BT022
23	MANJESH GOWDA NK	1SG21BT023

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57

(Affiliated to VTU, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY 2022-23 ODD

DEPARTMENT OF BIOTECHNOLOGY

Sub: Microbiology Lab **Sub Code: 21BTL35** **Sem : III** **Batch: II**

Staff Incharge: Dr.Soumya C/Dr.Gouri Mirji **No Of Students: 23**

Sl No	Name of the student	USN
1	NANDAN R BARADE	1SG21BT024
2	NANDINI S	1SG21BT025
3	NAVANISH SAI VIKRAM	1SG21BT026
4	NIKHITHA SARIKA GOWDA M S	1SG21BT027
5	POOJASHREE S J	1SG21BT028
6	PUNITH N	1SG21BT029
7	R ANITHA	1SG21BT030
8	ROHAN S ANDEWADI	1SG21BT031
9	SANJANA L	1SG21BT032
10	SHARATH N	1SG21BT033
11	SHILPA EJ	1SG21BT034
12	SHRINIDHI V	1SG21BT035
13	SINCHANA D	1SG21BT036
14	SINDHU VM	1SG21BT037
15	SRINIVASAN R	1SG21BT038
16	SUSANNA CATHERINE F	1SG21BT039
17	SWATHI M P	1SG21BT040
18	VAIDURYA KEERTHI	1SG21BT041
19	VARADHAJITH M	1SG21BT042
20	VARSHA M	1SG21BT043
21	VARSHINI R PRASAD	1SG21BT044
22	VIJAY KUMAR H M	1SG21BT045
23	VISMAYA L	1SG21BT046

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797

Ay: 2022-2023
2022-ODD

DEPARTMENT OF BIOTECHNOLOGY

STUDENT LIST

FIFTH SEMESTER

SL.NO	USN	STUDENTS NAME
Total Strength		59
Class Teacher		Dr Soumya C
1	1SG20BT001	AASTHA ROY
2	1SG20BT002	ABDULSAMAD A HAZRATBHAI
3	1SG20BT003	AISHWARYA BL
4	1SG20BT004	ALICE JENNIFER
5	1SG20BT005	AMINA FARHEEN
6	1SG20BT006	AMOGHAVARSHA G
7	1SG20BT007	ANANYA B S
8	1SG20BT008	ANNAPAREDDY TRINAYANIREDDY
9	1SG20BT009	ASFIA SULTANA
10	1SG20BT010	BHOOMIKA B V
11	1SG20BT011	CHAITHRA SHREE A
12	1SG20BT012	CHETAN KAGINELLI
13	1SG20BT013	CHETHANA R
14	1SG20BT014	DANUSH P
15	1SG20BT015	DEEKSHITHA M
16	1SG20BT016	DEEPIKA PRAKASH
17	1SG20BT017	DEEPTHI P M
18	1SG20BT018	DHANUSH HALLIKAR S
19	1SG20BT019	DHARANI G
20	1SG20BT020	DIVYA K N
21	1SG20BT021	G L NIKHIL KUMAR REDDY
22	1SG20BT022	GANAVI N

Signature of HOD

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore-57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 ; Fax: 080-28 372797

Ay: 2022-2023
2022-ODD

DEPARTMENT OF BIOTECHNOLOGY

STUDENT LIST

23	1SG20BT023	GAYATHRI S
24	1SG20BT024	HARSHITHA REDDY G
25	1SG20BT025	J JOYLYNN GRACE
26	1SG20BT027	K NARAHARI
27	1SG20BT028	KANGAN M
28	1SG20BT029	KHUSHI BHAVANI K SINGH
29	1SG20BT030	KRUTHI J
30	1SG20BT031	NAMITA KRISHNAKUMAR
31	1SG20BT033	NESARA M
32	1SG20BT034	NIRANJAN M
33	1SG20BT035	NISCHITHA K S
34	1SG20BT036	NITHEESH S
35	1SG20BT037	P SWATHI
36	1SG20BT038	POOJA M
37	1SG20BT039	PRATHIKSHA GS
38	1SG20BT040	PRAVALIKA KV
39	1SG20BT041	PRIYANKA V
40	1SG20BT042	RAKSHA K
41	1SG20BT043	RAKSHA S
42	1SG20BT044	RAKSHITH R
43	1SG20BT045	RANJITHA C M
44	1SG20BT046	RUMANA BANU
45	1SG20BT047	S N MEGHA MOURYA NANDAN
46	1SG20BT048	SANGEETHA M M
47	1SG20BT049	SANJANA S S
48	1SG20BT050	SAVITHA M
49	1SG20BT051	SHARON RAJ
50	1SG20BT052	SMRITHI B

Signature of HOD

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797

Ay: 2022-2023
2022-ODD

DEPARTMENT OF BIOTECHNOLOGY

STUDENT LIST

51	1SG20BT053	SUDIKSHA K KUMAR
52	1SG20BT054	SUSHMA S
53	1SG20BT055	SWATHI BHARADWAJ R
54	1SG20BT056	TANU KUMAR C
55	1SG20BT057	UPPUTURI JAHNAVI
56	1SG20BT058	VAMSHITHA R SHETTY
57	1SG20BT059	VARSHITHA N R
58	1SG20BT060	VARUN S
59	1SG20BT061	VIBHA SAMYUKTA

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Signature of HOD
Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797

Ay: 2022-2023
2022-ODD

DEPARTMENT OF BIOTECHNOLOGY

STUDENT LIST

THIRD SEMESTER		
SL.NO	USN	STUDENTS NAME
Total Strength		46
Class Teacher		Dr Gowri Mirji
1	1SG21BT001	AISHWARYA LOMTE
2	1SG21BT002	AKASH V DESAI
3	1SG21BT003	AKSHITHA S
4	1SG21BT004	ANJANA G
5	1SG21BT005	ANUSHA H P
6	1SG21BT006	ANUSHA N RAJU
7	1SG21BT007	BINDHUSHREE A
8	1SG21BT008	CHAITRA P
9	1SG21BT009	DARSHAN P
10	1SG21BT010	DEEKSHITH GOWDA
11	1SG21BT011	DEEPTHI M
12	1SG21BT012	G PALLAVI
13	1SG21BT013	GUNASHREE S
14	1SG21BT014	HEMANTH KUMAR D
15	1SG21BT015	HEMANTH KUMAR T
16	1SG21BT016	JANAVI R
17	1SG21BT017	KAVANA K O
18	1SG21BT018	KRISHNA TEJA
19	1SG21BT019	LAKSHMINARASIMHA C
20	1SG21BT020	LAXMI KASHAPPA GADAGIN
21	1SG21BT021	LEONDER RAFFAEL CLEMENTS

Signature of HOD

Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(An ISO 90001:2015 and 14001:2015 Certified Institution)
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
(Accredited by NAAC with "A" GRADE)(Accredited by NBA for ECE, CSE, ISE, ME, EEE)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797

Ay: 2022-2023
2022-ODD

DEPARTMENT OF BIOTECHNOLOGY

STUDENT LIST

22	1SG21BT022	MADHURA H K
23	1SG21BT023	MANJESH GOWDA NK
24	1SG21BT024	NANDAN R BARADE
25	1SG21BT025	NANDINI S
26	1SG21BT026	NAVANISH SAI VIKRAM
27	1SG21BT027	NIKHITHA SARIKA GOWDA M S
28	1SG21BT028	POOJASHREE S J
29	1SG21BT029	PUNITH N
30	1SG21BT030	R ANITHA
31	1SG21BT031	ROHAN S ANDEWADI
32	1SG21BT032	SANJANA L
33	1SG21BT033	SHARATH N
34	1SG21BT034	SHILPA EJ
35	1SG21BT035	SHRINIDHI V
36	1SG21BT036	SINCHANA D
37	1SG21BT037	SINDHU VM
38	1SG21BT038	SRINIVASAN R
39	1SG21BT039	SUSANNA CATHERINE F
40	1SG21BT040	SWATHI M P
41	1SG21BT041	VAIDURYA KEERTHI
42	1SG21BT042	VARADHAJITH M
43	1SG21BT043	VARSHA M
44	1SG21BT044	VARSHINI R PRASAD
45	1SG21BT045	VIJAY KUMAR H M
46	1SG21BT046	VISMAYA L

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Signature of HOD
Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY:2022-2023

2022-ODD

21BT34- MICROBIOLOGY

QUESTION BANK

MODULE – 1 INTRODUCTION TO MICROORGANISMS:

Scope and History of microbiology (Milestone contributions from scientists); Origin of life-: Archaea, Prokaryotes and Eukaryotes. Microbial Diversity and Taxonomy. Structure, Classification and Reproduction of bacteria, Fungi, Viruses, Protozoa and Algae. General features of Prions, Spirochetes, Actinomycetes, Rickettsiae and Mycoplasma.

1. Define microbiology and recall various basic and applied areas of Microbiology
2. Describe the scope of microbiology
3. Note on Time line/ History of microbiology
4. Summarize the notable contribution of five researchers in golden age of microbiology
5. Give an account of the contributions of Louis Pasteur, Antony van Leeuwenhoek and Alexander Fleming towards the growth of microbiology
6. Explain in detail Robert Koch's Germ theory of disease
7. Note on origin of life
8. Discuss in detail the procedure and outcomes of Swan neck flask experiment
9. Give an overview of Microbial diversity. Add a note on five kingdom classifications and 3 kingdom classification systems
10. Define taxonomy? Write an experimental note on numerical taxonomy
11. Discuss the newer approaches for microbial taxonomy
12. Write a short note on the microbial properties used in classification
13. Differentiate between Prokaryotes and Eukaryotes
14. With neat labeled diagram, explain the ultra-structure of bacteria/ Write the structure and explain the gram –ve cell wall of bacteria
15. What are the various criteria used to classify the bacteria/Discuss the classification of bacteria based on cell shape and cell wall
16. Add a note on reproduction/conjugation in bacteria
17. What are extremophiles? Explain
18. Explain the general structure of fungi
19. Briefly explain the classification of fungi
20. Give a detailed account on modes of sexual and asexual reproduction in fungi
21. Explain the general structure of Viruses
22. Briefly explain the classification of viruses
23. Write explanatory note on the mode of replication of retrovirus in the host cell
24. Explain the replication of animal virusWith a neat labeled diagram explain the lytic and lysogenic cycles in virus/ Explain bacteriophage replication
25. Explain the general structure of protozoa
26. Briefly explain the classification of protozoa
27. Write explanatory note on the reproduction by protozoa
28. Explain the general structure of algae

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

29. Give an account of the classification of algae
30. Write explanatory note on the reproduction by algae
31. Elaborate on the general features of Prions and Spiroch
32. Elaborate on the general features of Actinomycetes, Rich and Mycoplasma.

MODULE –2 METHODS AND TECHNIQUES IN MICROBIOLOGY

Microscopy: Concepts, Light, Electron, Phase Contras, Ass Micrometry. Media preparation, types of media. Cultur Differential Staining Techniques. Sterilization & disinfect

1. Elaborate/ Demonstrate on the general features of bright field microscope
2. With a ray diagrams, differentiate light microscopy and electron microscopy
3. Illustrate the working principle of transmiss El diagram
4. Describe/ explain the rad
5. With the help of limitation of phase
6. Add a note on acoustic mi
7. Explain camera lucida
8. Define Micrometry.
9. Define media. What are the ingredients
10. In detail, explain the
11. Explain the media preparation
12. What is the composition of EMB and nutrient agar? Add its application
13. Discuss the technique that best suits for isolating pure culture of bacteria/Elaborate on pour plate technique
14. Explain IMViC test with re
15. Explain the principle and proce
16. Explain plate count method of enumerating bacteria
17. Explain the importance of staining technique tak
18. Rephrase various staining techniques and also discu fast staining
19. Define sterilization and disinfection. In detail, explain di
20. With neat diagrams, explain the principle, working and application of hot air oven, autoc
21. Describe the use of radiation for sterilization
22. Explain the principle and procedure involved in e membrane filtration method
23. Write a short note on cold steriliz

MODULE – 3 MICROBIAL GROWTH

Growth curve patterns; Physical
Secondary metabolites with
Respiration and Fermentation.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

1. Define bacteria growth. Derive the mathematical equation explaining growth rate of generation time
2. In detail explain the physical parameters that affect microbial growth
3. Elaborate on physical condition required for growth of bacteria
4. A medium has been supplemented with 2 sugars namely glucose and lactose. What will the growth patter of E. coli, under such condition
5. Classify various metabolites, explain how they are produced with suitable examples
6. Define primary metabolites. Explain the importance of primary metabolic produce by microbes
7. Elaborate on heterolactic acid pathway. Explain the importance of secondary metabolic produce by microbes
8. Write a note on antibiotics
9. Outline the steps involved in the production of penicillin by the application of microorganism
10. Explain the application of microbial enzyme Viz Protease
11. Discuss the production of citric acid and acetic acid
12. Define metabolism. Discuss in detail the metabolic process in anaerobic bacteria
13. Give an account of the EMP Pathways/ Give detailed account on glycolysis/Explain the process of breakdown of glucose under aerobic condtion . Add a note on glucose balance sheet for aerobic respiration/Outline various products formed and steps in glucolysis with the help of line diagram. Add a note on its significance
14. Short notes on PPP pathway and Diauxic growth curve
15. Explain TCA cycle with its energy sheet
16. Describe fermentation with an example. Describe the production of ethanol from yeast

MODULE – 4 MEDICAL MICROBIOLOGY:

Introduction to Medical Microbiology, Common diseases caused by microbes: Bacterial diseases: Typhoid, Diphtheria, Cholera, Tuberculosis, Leprosy, Plague, Syphilis, Gonorrhea; Viral diseases: Herpes, Polio, Hepatitis, AIDS, Rabies, SARS and H1N1; Protozoan diseases: Malaria: common types of fungal infections

1. Define medical microbiology. Explain the scientific basis of medical microbiology
2. Describe etiology, pathogenicity, symptoms, diagnosis caused by typhoid bacteria and its treatment procedure
3. Explain the causative organization, symptoms clinical diagnosis and treatment of diphtheria
4. Explanatory note on Pathogenesis of cholera and its diagnosis, treatment
5. Write a elaborate/explanatory note on Pathogenesis of mycobacterium tuberculosis/ leprae and its diagnosis, treatment
6. Describe the disease cycle of entamoeba histolytica. Add a note on pathogenesis
7. Explain in detailed the morphology and pathogenesis, diagnosis and treatment of disease Leprosy
8. Explain in detailed the morphology and pathogenesis, diagnosis and treatment of disease plague

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

9. Explain in detailed the morphology and pathogenesis, diagnosis and treatment of disease Syphilis
10. Short note on Gonorrhea
11. Explain the pathogenesis and diagnosis of Herpes
12. Explain the pathogenesis and prophylaxis and diagnosis of poliomyelitis
13. Write note on the hepatitis infection. Add a note on the types of hepatitis viruses/Summarize the causative organism, symptoms, route of infection, laboratory diagnosis and treatment for hepatitis
14. Repharse the causative organism, symptoms, route of infection, laboratory diagnosis and treatment for hepatitis
15. Give a detailed explanation on AIDS. Add a note on HIV reflection
16. Write a critical note on rabies
17. Give a brief account of H1N1
18. Give a brief account of SARS
19. In detail/Describe/Demonstrate/Diagrammatically explain the life cycle of Malaria parasite/microbe causing malaria in India/ Contrast the causative organism, symptoms, route of infection, laboratory diagnosis and treatment for malaria
20. Contrast the causative organism, symptoms, route of infection, laboratory diagnosis and treatment for fungal disease

MODULE – 5 AIR, WATER AND SOIL MICROBIOLOGY:

Soil Microbiology: Role of microbes and soil fertility. Biogeochemical cycles. Bio fertilizers: VAM, Rhizobium and Azotobacter. Air sampling techniques and commonly found atmospheric microbe profile. Water sampling techniques and commonly found atmospheric microbe profile.

1. Write a short notes on Types, role and activity of soil microbes
2. Assess the role of various biogeochemical cycles in the environment. Conclude your answer with the help of nitrogen cycle
3. Give a detailed/ explanatory account of carbon, Sulphur Cycle
4. Define bio fertilizer. Explain the importance of biofertilizers
5. Explain the method of isolation and mass production of rhizobium
6. Write a note on VAM
7. Explain the method of isolation and mass production of azotobacter
8. Define aerobiology. Significances of aerobiological studies
9. What are air samplers? Discuss the air sampling principles and samplers used.
10. Write a critical note on working and application any two air sampling technique (Andersons air samples)
11. Note on commonly found atmospheric microbe profile.
12. Define bioremediation. Explain in detail the technique used to detect portability of water
13. Outline the microbiology of potable water
14. Outline the steps in sewage disposal and application of microorganism
15. Write short note on Marine micro flora

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
Web: www.sapthagiri.edu.in, Email: principal@sapthagiri.edu.in,
Phone:080-28 372800/1/2 Fax: 080-28 372797
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY:2022-2023

2022-ODD

21BT34- MICROBIOLOGY

ASSIGNMENT QUESTION BANK

Sl.No	Questions	Marks	Bloom's Taxonomy Level	Course Outcomes Mapped
	Assignment-I			
1	Illustrate the techniques employed for identification of corona virus. Add a note on corona vaccine preparation	5	L3	CO-1
2	Examine and list infection, symptoms and treatment for Pylori bacterial	5	L3	CO-1
	Assignment-II			
1	Employ the methods for sterilization of Operation theaters /Pharmaceutical product **(Any one)**	5	L3	CO-2
2	Explain Microorganisms is a source of secondary metabolite with one example	5	L3	CO-3
	Assignment-III			
1	Develop a method for Isolation and identification of any two microorganism from sewage/Infected plant/Soil/Air **(any one)**	5	L3	CO-4
2	Production of organic pesticides	5	L3	CO-4

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI
College of Engineering
Creating Tomorrow

SAPTHAGIRI COLLEGE OF ENGINEERING

Belagavi, and Recognized by AICTE, New Delhi)

(ISO: 9001-2015 and ISO: 14001-2015 certified Institute)

DEPARTMENT OF BIOTECHNOLOGY

QUESTION BANK

Subject: **Genomics and proteomics**

Subject Code: **18BT54**

Module 1: Introduction: Polymorphism

1. What is DNA polymorphism? Explain different types of polymorphisms.
2. Explain in detail about discovery of new genes and their function.
3. Discuss on early sequencing efforts in DNA sequencing.
4. Explain the methods of preparing genomic DNA
5. Explain Sanger dideoxy method of sequencing genomic DNA.
6. Discuss on advantages of shot gun approach of genomic DNA sequencing.
7. Explain the procedure of automated method of preparing genomic DNA.
8. Discuss in detail about genome project on E coli.
9. Write a note on Arabidopsis genome project.
10. Explain aim, mapping strategies and application of HGP.
11. Write a note on genome sequence and data base subscription.

Module 2: Genomics

1. What is gene variation? Explain SNPs with suitable example.
2. Explain the constructions of expressed sequence tags and their application.
3. What are DNA chip? Explain steps involved in DNA chip technology.
4. Explain genotyping tools involved in diagnostic assay and diagnostic services.
5. What are comparative genomics? Explain need of model organisms for comparative genomics.
6. What are functional genomics? Explain C.elegans as a model system used in functional genomics.
7. Explain Drosophila as a model system used in functional genomics.
8. Explain yeast as a model system used in functional genomics.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI
College of Engineering
Creating Tomorrow

SAPTHAGIRI COLLEGE OF ENGINEERING

Belagavi, and Recognized by AICTE, New Delhi)

(ISO: 9001-2015 and ISO: 14001-2015 certified Institute)

DEPARTMENT OF BIOTECHNOLOGY

QUESTION BANK

Module 3: GENOME MANAGEMENT

1. Explain C-Values of genomes
2. Explain the General architecture of prokaryotic and eukaryotic genome
3. Discuss the Organization of eukaryotic genome within the nucleus
4. Explain organization of Chloroplast and mitochondria genome
5. Summarize on Regulation of transcription
6. Explain Transcription factors and the co-ordination of gene expression.
7. Discuss in detail on Interference RNA
8. What is RNA silencing? Explain Si RNA
9. Applications in Functional genomics
10. Discuss in detail about on Medicine and Gene Knockdown
11. Explain Gene Editing -Crispr Cas9

Module 4: GENOME ANALYSIS

1. What are molecular markers? Explain RFLP and RAPD with suitable examples
2. Describe the methods of detection of SNPs.
3. Explain the steps involved in SCAR marker preparation as a tool in molecular mapping.
4. Write an explanatory note on AFLP and its advantage and disadvantage.
5. Explain Marker assisted selection
6. Discuss in detail about Map based Cloning
7. Write a short note on T-DNA and transposon tagging
8. Discuss the principal and procedure of Differential display via RT-PCR
9. Micro-array in functional Genomics
10. Discuss on Bioinformatics analysis – clustering methods

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

11. Illustrate on principles of FISH - DNA amplification markers

12 Write a short note on Telomerase as molecular markers.

Module 5: PROTEOMICS

1. Explain large scale preparation of proteins and peptides
2. Outline Synthesis of peptides,
3. Write a short note on use of peptides as probes and Proteins as drugs
4. Explain yeast two hybrid interaction screens
5. Discuss Mass-spec based analysis of protein expression
6. Explain Protein Chip" - interactions and detection techniques
7. Illustrate two dimensional PAGE for proteome analysis, Detection of proteins on SDS gels
8. Write a note on Protein cleavage
9. Note on Edman protein microsequencing
10. Explain Automation in proteomics
11. Discuss in detail on Applications of proteome analysis to drug development and toxicology
12. Summarize on Phage antibodies as tools for proteomics.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING

Belagavi, and Recognized by AICTE, New Delhi)

(ISO: 9001-2015 and ISO: 14001-2015 certified Institute)

DEPARTMENT OF BIOTECHNOLOGY

QUESTION BANK

ASSIGNMENT QUESTIONS

Subject: **Genomics and proteomics**

Subject Code: **18BT54**

1. Discuss in detail about genome project on E coli.
2. Write a note on Arabidopsis genome project.
3. Explain aim, mapping strategies and application of HGP.
4. Write a note on genome sequence and data base subscription.
5. Explain the General architecture of prokaryotic and eukaryotic genome
6. Discuss the Organization of eukaryotic genome within the nucleus
7. Explain organization of Chloroplast and mitochondria genome
8. Summarize on Regulation of transcription
9. Explain Transcription factors and the co-ordination of gene expression.
10. Explain Drosophila as a model system used in functional genomics.
11. Explain yeast as a model system used in functional genomics

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

USN	1	SG								F-IAT-04/RO

SAPTHAGIRI College of Engineering Creating Tomorrow AY: 2022-2023	**SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57** (Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi) #14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057 **An ISO 90001:2015 and 14001:2015 Certified Institution** **Accredited by NAAC -A GRADE**
2022- 23 ODD	**DEPARTMENT OF BIOTECHNOLOGY**

FIRST INTERNAL ASSESSMENT TEST- NOV 2022

Subject	:	Microbiology	**Date/Day**	:	Tuesday 29 /11/2022
Subject Code	:	21BT34	**Duration**	:	1hour
Semester/Section	:	III	**Time**	:	3.00PM-4:00 PM
Staff-In charge	:	Dr Soumya C	**Max Marks**	:	20

Answer any two full questions choosing one full question from each Module

Main Question	Sub Question	Questions	Marks	BTL	Course Outcomes Mapped
		Module -1			
1	a	Explain in detail the procedure and outcomes of swan neck Experiment	5	L3	CO1
	b	With a neat labeled diagram explain ultra structure of Bacteria	5	L3	CO1
		OR			
2	a	Give a detail account on characteristics and classification of fungi	5	L3	CO1
	b	Explain in detail Robert Koch's "Germ theory of diseases"	5	L3	CO1
		Module – 1			
3	a	Compare and Differentiate between Prokaryotes and Eukaryotes	5	L4	CO1
	b	Summarize the notable contribution of Five researchers in the golden age of Microbiology	5	L3	CO1
		OR			
4	a	Give an account on general characterization of Viruses. Add a note on reproduction cycle in Viruses	5	L3	CO1
	b	Explain in detail on cultural characteristics of Bacteria	5	L3	CO1

CO1: To learn the details of classification, structural features and functional aspects of prokaryotic and eukaryotic microorganisms.

Accepted/Accepted with Modification/Rejected

Course Coordinator **Module Coordinator** **HOD**

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 202 -202

202 -ODD

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : Microbiology — IA — First / Second / Third
Date/Day : 29/11/2022 — Staff-In charge : Dr. Soumya. G

Question Number	Solution	Marks Allocated
1	[a] Swan Neck Experiment → Louis pasteur - concept of Spontaneous generats → Diagram - labelled → procedure → Disproved the theory.	5
	[b] Bacteria - ultra structure → Diagram – with proper labels → outercovering, cytoplasm, Nucleoid & functns → Ribosome	5
	[OR]	
2	→ (a) characteristics & classical of fungi → Mycelia, hyphae, spore, conidia, conidiophore → examples → unicellular, Multicellular → Reproduction → classification: Kingdom, division, Sub, class	5
	(b) Robert Koch 'Germ theory of disease' → four postulates → Germ theory of disease → isolation of Antrax bacillus, pure culture etc	5

Signature of the Staff In charge Signature of Scrutinizer Signature of HOD

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

USN	1	SG								F-IAT-04/RO

SAPTHAGIRI College of Engineering Creating Tomorrow

AY: 2022-2023

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

2022- 23 ODD

DEPARTMENT OF BIOTECHNOLOGY

SECOND INTERNAL ASSESSMENT TEST- DEC 2022

Subject	:	Microbiology	Date/Day	:	Friday 30 /12/2022
Subject Code	:	21BT34	Duration	:	1hour
Semester/Section	:	III	Time	:	3.00PM-4:00 PM
Staff-In charge	:	Dr Soumya C	Max Marks	:	20

Answer any two full questions choosing one full question from each Module

Main Question	Sub Question	Questions	Marks	BTL	Course Outcomes Mapped
		Module -2			
1	a	Explain the principle, construction and application of Phase contrast microscope	5	L3	CO2
	b	What is Pure Culture Techniques? Explain the methods of Isolation of Pure culture	5	L3	CO2
		OR			
2	a	Elaborate general features of Electron microscopy. add a note on difference between TEM and SEM.	5	L3	CO2
	b	In detail explain the different type of media used for microbe culture	5	L3	CO2
		Module – 2/3			
3	a	Define Micrometry? Add a note on its working principle and application.	5	L3	CO2
	b	Define Growth Curve? Explain the growth curve pattern of Ecoli.	5	L3	CO3
		OR			
	a	Define Staining Techniques? Explain gram staining in detail. Add a note on its application	5	L3	CO2
	b	Elaborate on microbial enumeration techniques.	5	L3	CO3

CO2: Inferring and analysis of various microbial techniques for the isolation, growth and characterization of microbes

CO3: Analyse different types of growth patterns, metabolites and metabolic pathways

Accepted/Accepted with Modification/Rejected

Course Coordinator Module Coordinator HOD

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 202 -202

202 -ODD

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : Microbiology 21BT34 IA First / Second / Third
Date/Day : 30/12/2022 Staff-In charge : Dr. Soumya. G

Question Number	Solution	Marks Allocated
1	[a] phase contrast microscope. → Principle → construction → Working → Ray diagram, application,	5
	[b] Pure culture technique - definition. → Method of pure culture technique → Spread plate → Streak plate, pour plate method → Advantage & disadvantage	5
	(OR)	
2	a) Electron microscopy → General feature, components, working principle → Difference between TEM & SEM → Electron beam, Sample preparation, Specimen Stage → Screen, dimensional projects	5
	b) Different type of media → Media used for Bacterial growth - NB, NA, LB → Media used for fungal gro - PDA, SDA, MRBA	5

Signature of the Staff In charge Signature of Scrutinizer Signature of HOD

Page No: of

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

USN	1	SG							F-IAT-04/RO

SAPTHAGIRI College of Engineering Creating Tomorrow

AY: 2022-2023

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

2022- 23 ODD | **DEPARTMENT OF BIOTECHNOLOGY**

THIRD INTERNAL ASSESSMENT TEST- FEB 2023

Subject	:	**Microbiology**	**Date/Day**	:	**Wednesday 01 /03/2023**
Subject Code	:	**21BT34**	**Duration**	:	**1hour**
Semester/Section	:	**III**	**Time**	:	**900PM-10:00 PM**
Staff-In charge	:	**Dr Soumya C**	**Max Marks**	:	**20**

Answer any two full questions choosing one full question from each Module

Main Question	Sub Question	Questions	Marks	BTL	Course Outcomes Mapped
		Module -4			
1	a	Give an Explanatory note on Cause ,sign and symptoms, diagnosis and treatment of H1N1	5	L3	CO4
	b	Explain in detail on Cause ,sign and symptoms, diagnosis and treatment of malaria	5	L3	CO4
		OR			
2	a	Explain in detail on Cause ,sign and symptoms, diagnosis and treatment of TB	5	L3	CO4
	b	Give an explanatory note on fungal infection	5	L3	CO4
		Module –5			
3	a	Explain working of any three types of impactors for air sampling	5	L3	CO4
	b	What are Bio fertilizers? Explain in detail bacterial bio fertilizers and its mass production	5	L3	CO4
		OR			
4	a	What is Bioremediation? Explain microbes in bioremediation Process	5	L3	CO4
	b	Explain industrial application of microbial enzymes	5	L3	CO4

CO4: Outline the role of microorganisms towards environmental protection, industrial applications and infectious diseases.

Accepted/Accepted with Modification/Rejected

Course Coordinator **Module Coordinator** **HOD**

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 202_-202_

202_-ODD

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : Microbiology, 21BT34 IA ✓ First / Second / Third
Date/Day : 01/03/2023 Staff-In charge : Dr. Soumya. C

Question Number	Solution	Marks Allocated
	Module- 4	
(1)	(a) H, N, [b]	
	→ causal Organism → Symptoms, pathogenesis → diagnosis → treatment } 5	5
	(b) Malaria → causal Organism → pathogenesis → Sign & symptoms → diagnosis, treatment } 5	5
2)	(a) TB, → causal Organisms → Sign & Symptoms → pathogenesis → Diagnosis → treatment } 5	5
	(b) Fungal infection → Fungi → Example → yeast infection - Sign & symptoms, treatment → Ringworm - Sign & symptom, treatment } 2½ + 2½	5

Signature of the Staff In charge Signature of Scrutinizer Signature of HOD

Page No: of

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

USN	1	SG								F-IAT-04/RO

SAPTHAGIRI College of Engineering Creating Tomorrow AY: 2022-2023	**SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57** (Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi) #14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057 **An ISO 90001:2015 and 14001:2015 Certified Institution** **Accredited by NAAC -A GRADE**
2022- 23 ODD	**DEPARTMENT OF BIOTECHNOLOGY**

FOURTH INTERNAL ASSESSMENT TEST- MAR2023

Subject	:	Microbiology	Date/Day	:	Friday 24/03/2023
Subject Code	:	21BT34	Duration	:	1hour
Semester/Section	:	III	Time	:	3.00PM-4:00 PM
Staff-In charge	:	Dr Soumya C	Max Marks	:	20

Answer any one questions (A or B)from each Module

Main Question	Sub Question	Questions	Marks	BTL	COS
		Module -1			
1	a	Summarize on contribution of Louis Pasteur and Joseph Lister	4	L3	CO1
	b	Elaborate general structure of actinomycetes and Prions	4	L4	CO1
		Module -2			
2	a	Explain the Principle ,Construction and Application of Dark field microscope	4	L3	CO2
	b	Explain simple and Differential staining techniques in detail.	4	L3	CO2
		Module – 3			
3	a	What is Cellular Respiration ?Explain in detail on EMP pathway and Add a note on its significance	4	L3	CO3
	b	What is Sterilization? Explain a Physical method of sterilization in detail.	4	L3	CO3
		Module – 4			
4	a	Explain in detail on Cause ,sign and symptoms, Pathogenesis , diagnosis and treatment of Typhoid and Pneumonia	4	L3	CO3
	b	Explain in detail on Cause ,sign and symptoms, Pathogenesis, diagnosis and treatment of COVID 19 and SARS	4	L3	CO3
		Module – 5			
	a	Define SCP?Explain the Production of SCP	4	L3	CO4
	b	Explain microbiology of waste water treatment in detail.	4	L3	CO4

CO1: To learn the details of classification, structural features and functional aspects of prokaryotic and eukaryotic microorganisms.

CO2: Inferring and analysis of various microbial techniques for the isolation, growth and characterization of microbes

CO3: Analyse different types of growth patterns, metabolites and metabolic pathway

CO4: Outline the role of microorganisms towards environmental protection, industrial applications and infectious diseases.

Accepted/Accepted with Modification/Rejected

Course Coordinator Module Coordinator HOD

Principal
Sapthagiri College of Engineering
#14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 202 -202

202 -ODD

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : Microbiology 21BT34 IA — First / Second / Third / Fourth
Date/Day : 24/3/2023 Staff-In charge : Dr. Soumya C

Question Number	Solution	Marks Allocated
1	[a] contribution of Louis pasteur → pasteurization → pasteur disproval of spontaneous generation 2 → fermentation → Joseph-lister: Antiseptic treatment 2 → Aseptic technique [OR]	4
	[b] Actinomycetes → general characteristics 2 → habitat, morphology, Prions: → characteristics 2 → Structure of prion	4
	OR	
2	[a] principle — 1 construction — 2½ - component, working - 1 Applications of dark field microscope - 1 Ray diagram - 2 [OR]	4
	(b) Simple staining & differential staining → definition — 1 → Simple stain - procedure - 1 → Diff stain - procedure - 1 → stained cell - 1	4

Signature of the Staff In charge Signature of Scrutinizer Signature of HOD

Page No: of

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 202 -202

202 -ODD

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : IA First / Second / Third
Date/Day : Staff-In charge :

Question Number	Solution	Marks Allocated
5	(a) Scp- definition —1 → product of Scp. - Steps involved —1 → Microorganism & Substrate used —1 → Advantage — 1 [OR] (b) Microbiology of waste water treatment. → primary treatment → Secondary treatment - Aerobic & Anaerobic → Activated Sludge process → Microorganisms involved → Mechanism. → Tertiary treatment	4 4 3 1

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Signature of the Staff In charge Signature of Scrutinizer Signature of HOD

USN	1	SG								F-IAT-04/RO

SAPTHAGIRI College of Engineering Creating Tomorrow AY: 2022-2023	**SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57** (Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi) #14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057 **An ISO 90001:2015 and 14001:2015 Certified Institution** **Accredited by NAAC -A GRADE**
2022- 23 ODD	**DEPARTMENT OF BIOTECHNOLOGY**

FIRST INTERNAL ASSESSMENT TEST- JUNE

Subject	:	**Genomics and Proteomics**	**Date/Day**	:	**Tuesday 15 /11/2022**
Subject Code	:	**18BT54**	**Duration**	:	**1hour**
Semester/Section	:	**V**	**Time**	:	**3.00PM-4:00 PM**
Staff-In charge	:	**Dr Soumya C**	**Max Marks**	:	**30**

Answer any two full questions choosing one full question from each Module

Main Question	Sub Question	Questions	Marks	BTL	Course Outcomes Mapped
		Module -1			
1	a	Explain various types of DNA polymorphism with suitable example.	7.5	L3	CO1
	b	Explain the method of preparing DNA for Sequencing	7.5	L3	CO1
		OR			
2	a	Illustrate on the Principle and Process of Sanger dideoxy method of Sequencing. Add a note on its advantages and disadvantages	7.5	L3	CO1
	b	Explain Whole genome shot gun sequencing method.	7.5	L3	CO1
		Module – 1			
3	a	What is NGS? Explain the Illumina method of sequencing of DNA in detail.	7.5	L3	CO1
	b	Illustrate on the working principles and Process of Ion torrent method of Sequencing. Add a note on its applications	7.5	L3	CO1
		OR			
4	a	Explain the Principles and methodology of Pyrosequencing.Add note on its application	7.5	L3	CO1
	b	Illustrate the working of Maxam Gilbert method of Sequencing in comparison with Sanger method of sequencing	7.5	L3	CO1

CO1: Utilize the knowledge of genome sequencing & genome projects in experiment with model organisms

Accepted/Accepted with Modification/Rejected

Course Coordinator **Module Coordinator** **HOD**

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

USN	1	SG							F-IAT-04/RC

SAPTHAGIRI College of Engineering Creating Tomorrow AY: 2022-2023	**SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57** (Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi) #14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057 **An ISO 90001:2015 and 14001:2015 Certified Institution** **Accredited by NAAC -A GRADE**
2022- 23 ODD	**DEPARTMENT OF BIOTECHNOLOGY**

FIRST INTERNAL ASSESSMENT TEST- JUNE

Subject	:	**Genomics and Proteomics**	**Date/Day**	:	**Tuesday 15 /11/2022**
Subject Code	:	**18BT54**	**Duration**	:	**1hour**
Semester/Section	:	**V**	**Time**	:	**3.00PM-4:00 PM**
Staff-In charge	:	**Dr Soumya C**	**Max Marks**	:	**30**

Answer any two full questions choosing one full question from each Module

Main Question	Sub Question	Questions	Marks	BTL	Course Outcomes Mapped
		Module -1			
1	a	Explain various types of DNA polymorphism with suitable example.	7.5	L3	CO1
	b	Explain the method of preparing DNA for Sequencing	7.5	L3	CO1
		OR			
2	a	Illustrate on the Principle and Process of Sanger dideoxy method of Sequencing. Add a note on its advantages and disadvantages	7.5	L3	CO1
	b	Explain Whole genome shot gun sequencing method.	7.5	L3	CO1
		Module – 1			
3	a	What is NGS? Explain the Illumina method of sequencing of DNA in detail.	7.5	L3	CO1
	b	Illustrate on the working principles and Process of Ion torrent method of Sequencing. Add a note on its applications	7.5	L3	CO1
		OR			
4	a	Explain the Principles and methodology of Pyrosequencing.Add note on its application	7.5	L3	CO1
	b	Illustrate the working of Maxam Gilbert method of Sequencing in comparison with Sanger method of sequencing	7.5	L3	CO1

CO1: Utilize the knowledge of genome sequencing & genome projects in experiment with model organisms

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU-57
(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru- 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

AY: 2021-2022

2022-~~EVE~~N

DEPARTMENT OF BIOTECHNOLOGY

SCHEME & SOLUTION
INTERNAL ASSESSMENT TEST

Subject & Subject Code : 18BT54, Genomics & prote. IA First / Second / Third / Fourth
Date/Day : Staff-In charge : Dr Soumya C.

Question Number	Solution	Marks Allocated
1	a DNA polymorphism - definition • Types: RFLP – 2 SNPs – 2 with suitable example VNTRs – 2 STRs – 1½.	7.5M
2.	b Method preparing DNA for sequencing. → Isolation - procedure – 2, → Method of isolation – 2, → Quantification → Check the Quality 2 → Suitable PCR reaction 1½ OR	7½ M
2	[a] principle of Sanger method 2, → Shot fragment of DNA → primer - amplification 3½ → Addn of dNTPs & ddNTPs → Agarose gel elect., Sequence Read. advantage & disad 2	7½
	[b] Random phase 2 Assembly – 2 with diagram Finishing – 2 procedure – 1½	7½.

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Head of the Department
Dept. of Biotechnology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

Signature of the Staff In charge | Signature of Scrutinizer | Signature of HOD

SAPTHAGIRI
COLLEGE OF ENGINEERING
Recognised by AICTE, New Delhi & Affiliated to VTU, Belgaum

Individual Staff Appraisal

Staff Name:Dr.Soumya C	Sub Code:18BT54	Sub Name:Genomics & Proteomics
Section:2L	Department:BT	Total Students given Feedback:54

Sl.No	Questions	Total Rating	Out of Max	Per(%)
1	Adequacy Of Learning Material Provided.	496	540.0	91.85
2	Audibility/Clarity of Lecture.	504	540.0	93.33
3	Availability Of the Faculty After the Class Hours.	510	540.0	94.44
4	Chalk-Talk/ICT Tools Usage.	512	540.0	94.81
5	Interaction with the students in the class.	508	540.0	94.07
6	Impartial assessment of Students.	499	540.0	92.41
7	Discipline & Control on the class.	509	540.0	94.26
8	Planning Of Effective Teaching.	510	540.0	94.44
9	Regular & Punctual to the Classes.	510	540.0	94.44
10	Syllabus Coverage as per the Lesson Plan.	510	540.0	94.44
	Total :	5068	5400	93.85

HOD Review:

Excellent

HOD SIGNATURE
Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore-57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Individual Staff Appraisal

Staff Name:Dr.Soumya C	Sub Code:1PCC21BT34	Sub Name:Microbiology
Section:2L	Department:BT	Total Students given Feedback:31

Sl.No	Questions	Total Rating	Out of Max	Per(%)
1	Adequacy Of Learning Material Provided.	295	310.0	95.16
2	Audibility/Clarity of Lecture.	293	310.0	94.52
3	Availability Of the Faculty After the Class Hours.	293	310.0	94.52
4	Chalk-Talk/ICT Tools Usage.	293	310.0	94.52
5	Interaction with the students in the class.	283	310.0	91.29
6	Impartial assessment of Students.	281	310.0	90.65
7	Discipline & Control on the class.	290	310.0	93.55
8	Planning Of Effective Teaching.	290	310.0	93.55
9	Regular & Punctual to the Classes.	296	310.0	95.48
10	Syllabus Coverage as per the Lesson Plan.	291	310.0	93.87
		Total : 2905	3100	93.71

HOD Review:

Excellent

HOD SIGNATURE
Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore-57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Visvesvaraya Technological University

A / CIE Report Dec / Jan - 2023 Examination.

SAPTHAGIRI COLLEGE OF ENGINEERING, BANGALORE

Branch : BT Scheme : 2018 Semester : 5

Sl NO.	USN	18BT51	18BT52	18BT53	18BT54	18BT55	18BT56	18BTL57	18BTL58	18CIV59	STUDENT SIGNATURE
1	1SG20BT001	30	23	26	27	34	30	37	38	36	
2	1SG20BT002	27	33	29	26	32	29	35	39	36	
3	1SG20BT003	31	24	22	28	31	30	36	39	39	
4	1SG20BT004	35	36	33	34	36	40	36	40	40	
5	1SG20BT005	27	34	25	22	36	28	34	38	40	
6	1SG20BT006	28	34	31	35	32	38	35	39	37	
7	1SG20BT007	28	34	31	28	32	34	36	39	33	
8	1SG20BT008	33	35	36	34	35	40	38	40	39	
9	1SG20BT009	25	32	22	22	32	25	34	38	39	
10	1SG20BT010	34	31	35	32	37	34	35	40	40	
11	1SG20BT011	33	29	30	36	37	36	38	40	40	
12	1SG20BT012	24	20	21	23	32	31	35	39	38	
13	1SG20BT013	34	35	37	37	39	40	38	40	39	
14	1SG20BT014	31	24	19	22	25	19	30	33	32	
15	1SG20BT015	34	36	33	34	39	39	37	40	36	
16	1SG20BT016	26	27	23	27	30	30	34	39	35	
17	1SG20BT017	30	22	31	31	36	37	36	40	39	
18	1SG20BT018	27	25	21	28	31	26	35	39	40	
19	1SG20BT019	32	34	26	31	33	36	37	39	39	
20	1SG20BT020	35	29	31	31	39	38	34	40	38	
21	1SG20BT021	25	22	22	27	33	25	35	38	39	
22	1SG20BT022	33	30	33	34	34	36	36	39	38	
23	1SG20BT023	30	29	26	30	31	28	36	39	38	
24	1SG20BT024	26	27	20	20	25	24	33	36	38	
25	1SG20BT025	30	30	26	27	35	36	34	39	39	
26	1SG20BT027	28	29	24	26	29	32	36	39	35	
27	1SG20BT029	31	25	19	20	26	23	34	36	38	
28	1SG20BT030	26	22	22	20	26	27	32	37	36	
29	1SG20BT031	33	36	30	32	37	39	38	40	38	
30	1SG20BT033	25	24	20	26	26	27	34	38	38	
31	1SG20BT034	32	26	21	23	26	24	35	39	39	
32	1SG20BT035	35	30	27	24	36	32	36	39	39	
33	1SG20BT036	26	25	19	27	24	23	34	37	36	
34	1SG20BT037	29	27	25	28	28	33	33	39	39	
35	1SG20BT038	23	30	21	27	31	27	35	38	39	
36	1SG20BT039	31	29	22	25	26	24	35	38	39	

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

NO.											SIGNATURE
39	1SG20BT042	39	32	35	37	40	39	38	40	39	
40	1SG20BT043	27	32	30	31	36	32	36	40	37	
41	1SG20BT044	27	27	20	26	27	26	35	38	35	
42	1SG20BT045	35	34	34	40	37	38	38	40	39	
43	1SG20BT046	38	32	35	37	35	39	37	40	39	
44	1SG20BT047	21	28	22	30	25	30	36	38	36	
45	1SG20BT048	27	30	19	23	26	25	36	36	35	
46	1SG20BT049	39	33	37	38	39	40	39	40	39	
47	1SG20BT050	32	26	25	31	34	38	34	40	36	
48	1SG20BT051	28	29	25	34	34	34	34	40	39	
49	1SG20BT052	31	25	26	30	26	25	34	39	39	
50	1SG20BT053	29	31	20	30	30	34	37	38	38	
51	1SG20BT054	36	35	35	34	34	38	39	40	39	
52	1SG20BT055	35	31	33	35	34	37	35	40	38	
53	1SG20BT056	38	36	36	37	37	39	39	40	38	
54	1SG20BT057	28	28	24	21	30	26	35	38	35	
55	1SG20BT058	33	32	30	30	30	34	35	39	39	
56	1SG20BT059	32	31	27	28	30	29	37	39	39	
57	1SG20BT060	25	24	19	20	23	24	33	34	39	
58	1SG20BT061	35	36	37	37	39	40	38	40	39	
-x--	Faculty Signature										----xxxxxxx----

- values are either optional subjects or the faculty has not yet entered the marks

07/02/23

HOD
Seal and Signature

Prof. & Head
Dept. of Bio -Techno.
Sapthagiri College of Engineering
14/5, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

PRINCIPAL
Seal and Signature

7/2/23

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

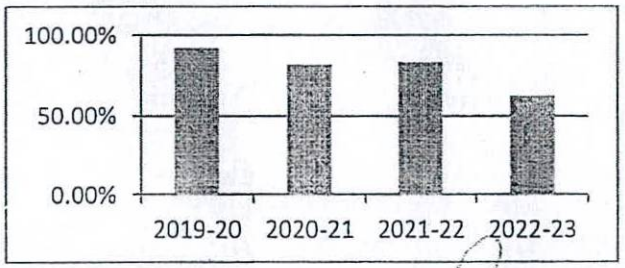
SAPTHAGIRI College of Engineering
Creating Tomorrow

SAPTHAGIRI COLLEGE OF ENGINEERING
DEPARTMENT OF BIOTECHNOLOGY
VTU Exam Result Analysis–OCT 2022–MAR 2023 [ODD semester 2022-23]

SEM : 3 — Before Revaluation

SL NO.	SUBJECT CODE	SUBJECT	FACULTY	STUDENTS [45]												% of Pass WOR
				APPEARED	PASSED	FAILED	ABS	S+	S	A	B	C	D	E	F	
1	21MAT31	Transform Calculus	Prof. Shwetha B S	45	30	15	NIL	1	4	7	8	9	7	3	6	66.6
2	21BT32	Unit Operations	Prof. Kavya M V	44	41	3	1	1	5	9	18	6	4	1	-	93.18
3	21BT33	Biochemistry	Dr. Veena S More	44	41	3	1	1	2	14	13	8	5	2	-	93.18
4	21BT34	Microbiology	Dr. Sowmya C	45	43	2	NIL	0	4	13	14	10	1	3	-	95.5
5	21BTL35	Microbiology Lab	Dr. Sowmya C/ Dr. Gouri Mirji	45	45	NIL	NIL	5	12	16	8	3	1	-	-	100
6	21SCR36	Social Connect And Responsibility	Dr. Gouri Mirji	44	44	NIL	1	13	19	6	5	-	1	-	-	100
7	21CIP37	Constitution Of India And Professional Ethics	Mr. Anantha Raj	45	45	NIL	NIL	1	1	16	21	6	-	-		100
8	21BT383	Biodiversity And Conservation Law	Dr. Gouri Mirji	45	45	NIL	2	19	17	6	-	-	1			100

ACADEMIC YEAR	2019-20	2020-21	2021-22	2022-23
	WOR	WOR	WOR	WOR
STUDENT APPEARED	49	43	59	45
PASSED	45	35	49	28
FAILED	04	8	10	17
ABSENT	NIL	NIL	01	02
OVERALL PASS %	91.83%	81.39%	83.05%	62.22%



HOD
Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore-57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
Chikkasandra, Hesaraghatta Road
Bangalore-560 057

SAPTHAGIRI
College of Engineering
Creating Tomorrow

SAPTHAGIRI COLLEGE OF ENGINEERING
DEPARTMENT OF BIOTECHNOLOGY
VTU Exam Result Analysis–OCT 2022–MAR 2023 [ODD semester 2022-23]

SEM: 3

Before Revaluation

FAST LEARNERS			
Sl No.	USN	Name	Total Marks (Percentage)
1	1SG21BT007	BINDHUSHREE A	734 (91.75%)
2	1SG21BT038	SRINIVASAN R	692 (86.5%)
3	1SG21BT001	AISHWARYA LOMTE	678 (84.75%)
4	1SG21BT022	MADHURA H K	671 (83.87%)
5	1SG21BT013	GUNASHREE S	659 (82.37%)
6	1SG21BT040	SWATHI M P	642 (80.25%)
7	1SG21BT042	VARADHAJITH M	634 (79.25%)
8	1SG21BT016	JANAVI R	628 (78.5%)
9	1SG21BT011	DEEPTHI M	619 (77.37%)
10	1SG21BT004	ANJANA G	618 (77.25%)

SLOW LEARNERS			
Sl No.	USN	Name	Total Marks (Percentage)
1	1SG21BT028	POOJASHREE S J	370 (46.25%)
2	1SG21BT015	HEMANTH KUMAR T	370 (46.25%)
3	1SG21BT003	AKSHITHA S	436 (54.5%)
4	1SG21BT031	ROHAN S ANDEWADI	441 (55.12%)
5	1SG21BT018	KRISHNA TEJA	454 (56.75%)
6	1SG21BT025	NANDINI S	463 (56.75%)
7	1SG21BT037	SINDHU VM	475 (59.37%)
8	1SG21BT010	CHAITRA P	471 (58.87%)
9	1SG21BT045	VIJAY KUMAR H M	496 (62.00%)

HOD
Head of the Department
Dept. of Bio-Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Principal
Sapthagiri College of Engineering
Chikkasandra, Hesaraghatta Road
Bangalore- 560 057

FAIL LIST				
Sl.No.	USN	Name	Subject with Subject code	Marks Scored(External)
1	1SG21BT003	AKSHITHA S	Microbiology (21BT34)	13
2	1SG21BT006	ANUSHA N RAJU	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	13
			Unit Operations (21BT32)	15
3	1SG21BT008	CHAITRA P	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	13
			Unit Operations (21BT32)	12
4	1SG21BT010	DEEKSHITH GOWDA	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	09
5	1SG21BT012	G PALLAVI	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	12
6	1SG21BT014	HEMANTH KUMAR D	Biochemistry (21MAT33)	12
7	1SG21BT015	HEMANTH KUMAR T	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	04
			Biochemistry (21MAT33)	13
			Microbiology (21BT34)	04
8	1SG21BT018	KRISHNA TEJA	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	03
			Unit Operations (21BT32)	12
			Biochemistry (21MAT33)	14
9	1SG21BT025	NANDINI S	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	03

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

10	1SG21BT026	NAVANISH SAI VIKRAM	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	05
11	1SG21BT028	POOJASHREE S J	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	03
12	1SG21BT031	ROHAN S ANDEWADI	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	00
13	1SG21BT032	SANJANA L	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	12
14	1SG21BT035	SHRINIDHI V	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	10
15	1SG21BT037	SINDHU VM	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	06
16	1SG21BT043	VARSHA M	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	06
17	1SG21BT046	VISMAYA L	Transform Calculus, Fourier Series And Numerical Techniques (21MAT31)	12

ABSENT LIST			
Sl.No.	USN	Name	Subject with Subject code
1	1SG21BT003	AKSHITHA S	Unit Operations (21BT32)
2	1SG21BT037	SINDHU VM	Biochemistry (21MAT33)

Head of the Department
Dept. of Biotechnology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
HOD

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
Chik Principal Hesaraghatta Road

SAPTHAGIRI College of Engineering
Creating Tomorrow

SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)
#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru– 560 057
An ISO 90001:2015 and 14001:2015 Certified Institution
Accredited by NAAC -A GRADE

Department of Biotechnology

VTU Exam Result Analysis–OCT 2022–MAR 2023 [ODD semester 2022-23]

SEM: 3 Before Revaluation

Total No. of Students= 45

Sl no.	Subject Code	No. of Eligible Students	No. of Students Passed	No. of Students Failed	NO. OF Students Absent	No of students secured marks				
						Below 40	40-50	50-60	60-70	70 & Above
1	21MAT31	45	30	15	NIL	9	7	9	8	12
2	21BT32	45	41	3	1	1	4	6	18	15
3	21BT33	45	41	3	1	2	5	8	13	17
4	21BT34	45	43	2	NIL	3	1	11	14	16
5	21BTL35	45	45	NIL	NIL	0	1	3	8	33
6	21SCR36	45	44	NIL	1	1	1	0	5	37
7	21CIP37	45	45	NIL	NIL	1	0	6	22	16
8	21BT383	45	45	NIL	NIL	1	0	0	6	38

Particulars	No. of Students
FCD	22
FC	05
SC	-
FAIL	17
AB	2

HOD

Head of the Department
Dept. of Bio -Technology
Sapthagiri College of Engineering
No. 57/1, Chikkasandra
Hesaraghatta Main Road
Bangalore -57

Principal
Sapthagiri College of Engineering
14/5, Chikkasandra, Hesaraghatta Main Road
Bengaluru - 560 057

Principal
Sapthagiri College of Engineering
Chikkasandra, Hesaraghatta Road
Bangalore- 560 057