

SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

UG Department of Biotechnology  
Add on Course: Industrial Biotechnology  
Session 2019-20  
Course Coordinator Report

A free Add-On Course for UG students in the Department Biotechnology, Shri Shivaji Education Society Amravati's Science College, Congress Nagar, Nagpur was held from 06<sup>th</sup> December 2019 to 21<sup>st</sup> February 2020. The course title was "Industrial Biotechnology". It is the complete beginner to Expert Course was perfect for anyone who wants to learn Industrial Biotechnology.

The Industrial Biotechnology course applies biotechnological techniques for industrial applications, focusing on fermentation technology, bioprocessing, and the production of biofuels. This course aims to equip students with practical skills and knowledge in bioprocess engineering, industrial-scale production, and quality control.

The course duration was 10 weeks (30 hours). Two theory classes were engaged on Friday & Saturday and one Practical was engaged in every week. The structure of marking system was 50 marks on theory paper and 40 marks on practical examination including 10 marks for internal. The question paper of theory examination was in MCQ type of 25 questions with four multiple choices. Practical examination was also taken on this course for 40 marks. Internal marks assessment was on the basis of regularity, attendance, assignment submission etc. All the 83 students were present in both theory and practical examination. The result was prepared and certificates were also distributed to the students.

**Action Taken-**In the Industrial Biotechnology Add-On course conducted by the department, students learned how to apply biotechnological principles to industrial processes, including fermentation, bioprocessing, and the production of bio-based products. They gained practical skills in optimizing industrial operations, understanding regulatory requirements, and implementing sustainable practices. The course also emphasized real-world applications, preparing students for careers in biotechnology and related industries.



*Deepthi*  
Ms. Deepthi Hynal  
Course- Coordinator  
Add on Course

**SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR**

**UG Department of Biotechnology  
Add on Course: Industrial Biotechnology  
Session 2019-20**

To,  
The Principal  
SSES Amt's Science College,  
Congress Nagar, Nagpur-12

Subject: For permission to conduct the add on courses in the Department of  
Microbiology and Biotechnology – 2019-2020

Respected Sir,

This is to request you that, the teachers of our Microbiology and  
Biotechnology department have prepared the syllabus and modules of the 30 hours  
certificate courses for the session 2019-2020.

The details of the course module, syllabus and time table is submitted here  
with.

Hence please permit to run the add on courses and oblige me.

Thanking you

Yours sincerely

Date:- 21/06/2019

*Mrs. INJINADHUGRI*

**HEAD  
Department of Microbiology  
Science College, Congress Nagar,  
NAGPUR.**



*Permitted  
ND. More*

SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

UG Department of Biotechnology

NOTICE

Date: 18/11/2019

All the students are informed that U.G. Department of Biotechnology runs **Add on Course: Industrial Biotechnology** for the session 2019-20. Interested students of B.Sc. are requested to provide their names to the course Coordinator Ms. Deepthi Hynal on or before 30/11/2019.



*Deepthi*  
Ms. Deepthi Hynal  
Course- Coordinator  
Add on Course



## **U.G. DEPARTMENT OF BIOTECHNOLOGY, SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR**

Accredited with CGPA of 3.51 at 'A+' Grade by NAAC, Bangalore  
A College with Potential for Excellence  
An Institutional Member of APQN  
Recognized Center for Higher Learning & Research  
A Mentor College under Paramarsh Scheme of UGC, New Delhi  
A Mentor College under Paris Sparsh Scheme of Maharashtra State

### **Add on Course for the Session 2019-20** *on* **Industrial Biotechnology**

#### **Course Introduction**

Industrial Biotechnology applies biotechnological techniques for industrial applications, focusing on fermentation technology, bioprocessing, and the production of biofuels. This course aims to equip students with practical skills and knowledge in bioprocess engineering, industrial-scale production, and quality control.

#### **Course Objectives**

- To introduce the fundamentals of industrial biotechnology and its applications.
- To provide hands-on experience in fermentation and bioprocess engineering.
- To explore the production processes and quality control of biofuels.
- To enhance problem-solving skills related to industrial biotechnological processes.

**Registration Date: 30/11/2019.**

**Prof. Atul Bobdey**  
Coordinator  
Dept. of Microbiology

**Prof. Mahendra Dhore**  
Principal  
Science College, Nagpur

**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course

**UG Department of Biotechnology**  
**Add on Course: Industrial Biotechnology**  
**Session 2019-20**

**Course Co-ordinator: Ms. Deepthi Hynal**

### **Course Introduction**

Industrial Biotechnology applies biotechnological techniques for industrial applications, focusing on fermentation technology, bioprocessing, and the production of biofuels. This course aims to equip students with practical skills and knowledge in bioprocess engineering, industrial-scale production, and quality control.

### **Course Objectives**

- To introduce the fundamentals of industrial biotechnology and its applications.
- To provide hands-on experience in fermentation and bioprocess engineering.
- To explore the production processes and quality control of biofuels.
- To enhance problem-solving skills related to industrial biotechnological processes.

**Instructional Strategies:** Theory class, Practical, Video clips, Models etc

**Evaluation Strategies:** Oral discussions and Final MCQ examination

### **Course Outcomes**

- Understand the principles and applications of industrial biotechnology.
- Gain practical skills in fermentation technology and bioprocessing.
- Learn the methods of biofuel production and quality control measures.
- Develop the ability to apply biotechnological solutions to industrial problems.

- **Duration of course:** Ten weeks (30 Hours)



*Deepthi*  
**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course

**UG Department of Biotechnology**  
**Add-on Course: Industrial Biotechnology (Session 2019-20)**

**Module: The Structure of Syllabus and system of evaluation**

Course	Theory Papers and Practical	Total Marks		
		Theory	Internal	Practical
Certificate Course in Industrial Biotechnology	Theory paper- Industrial Biotechnology * Theory examination will be of MCQ pattern having 25 questions each with equal marks.	50	10	40
	* Practical examination will be based on performance evaluation in the laboratory and hands-on-training	100		

*Deepthi*

**Ms. Deepthi Hynal**  
Add on Course Coordinator



*Amitabh Halder*

**Dr. Amitabh Halder**  
IQAC Coordinator  
Internal Quality Assurance Cell  
(IQAC)  
S. S. E. S. A. Science College  
Congress Nagar, Nagpur.

*Mahendra Dhore*

**Prof. Mahendra Dhore**  
Principal  
Principal  
S. S. E. S. Amravati's  
Science College, Nagpur.

# UG Department of Biotechnology

## Syllabus of Add-on Course: Industrial Biotechnology

(Session 2019-20)

### Course Units

#### Unit 1: Introduction to Industrial Biotechnology

- **Topics Covered:**

- Overview of industrial biotechnology
- Historical development and significance
- Key areas of application
- Economic and environmental impacts

- **Learning Outcomes:**

- Describe the scope and significance of industrial biotechnology.
- Identify key historical milestones and their impacts.
- Recognize various applications in industry.

#### Unit 2: Fermentation Technology

- **Topics Covered:**

- Basics of microbial fermentation
- Types of fermenters and their design
- Upstream and downstream processing
- Scale-up and optimization of ferme
- Types of biofuels and their production methods
- Biochemical pathways for biofuel production
- Quality control and assurance in biofuel production
- Environmental and economic aspects of biofuels

- **Learning Outcomes:**

- Identify different types of biofuels and their production techniques.
- Explain the biochemical pathways involved in biofuel production.
- Understand the importance of quality control in biofuel production.

### Practicals

1. **Practical 1: Microbial Fermentation**

- Objective: To perform and monitor a microbial fermentation process.
- Procedure: Setting up a fermentation experiment, sampling, and analyzing results.

2. **Practical 2: Bioreactor Operation**

- Objective: To operate a bioreactor and understand its components.
- Procedure: Setting up and running a bioreactor, monitoring parameters.

3. **Practical 3: Downstream Processing**



- Objective: To carry out downstream processing of fermentation products.
  - Procedure: Filtration, centrifugation, and purification techniques.
4. **Practical 4: Biofuel Production**
- Objective: To produce biofuels and test their quality.
  - Procedure: Setting up biofuel production, quality testing, and analysis.



*Deepthi*  
**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course



**UG Department of Biotechnology**  
**Add-on Course: Industrial Biotechnology (Session 2019-20)**

**Week-wise teaching plan:**

Week	Hrs.	Syllabus
Week 1	1	Overview of industrial biotechnology
	1	Historical development and significance
Week 2	1	Key areas of application
	1	Economic and environmental impacts
Week 3	1	Basics of microbial fermentation
	1	Types of fermenters and their design
Week 4	2	Upstream processing
	2	downstream processing
Week 5	2	Scale-up and optimization
	2	Types of biofuels and their production methods
Week 6	2	Biochemical pathways
	2	biofuel production
Week 7	2	Quality control
	2	assurance in biofuel production
Week 8	2	Environmental aspects of biofuels
	2	economic aspects of biofuels
Week 9	1	To perform and monitor a microbial fermentation process
	1	To perform and monitor a microbial fermentation process
Week 10	1	To carry out downstream processing of fermentation products
	1	To produce biofuels and test their quality



*Deepthi*  
**Ms. Deepthi Hynal**  
 Course- Coordinator  
 Add on Course

**UG Department of Biotechnology**  
**Add-on Course: Industrial Biotechnology (Session 2019-20)**

**Time Table**

w.e.f. 08/12/2019

Day	Theory
Friday	Ms. Deepthi Hynal (R. no-C6) Theory 4.00 PM - 5.00 PM
Saturday	Ms. Deepthi Hynal (R. no C6) practical, 4.00 PM - 5.00 PM
	Ms. Deepthi Hynal (R. no C6) Theory, 4.00 PM - 5.00 PM



*Deepthi*  
**Ms. D. Deepthi Hynal**  
Course- Coordinator  
Add on Course

# ATTENDANCE SHEET (2019-20)

S.S.E.S.A's Science College, Congress Nagar, Nagpur

Add on Course: Industrial Biotechnology (Session -2)

Class: Industrial Biotechnology

Month: Dec + Jan + Feb

✓  
Theory/ Practical:

Name of Lecturer: Ms. D. Deepthi Thynal

Sr. No	Name of Student	13/12/19	14/12/19	20/12/19	21/12/19	03/01/20	04/01/20	10/01/20	11/01/20	17/01/20	18/01/20	24/01/20	25/01/20	07/02/20	08/02/20	14/02/20	15/02/20	22/02/20	28/02/20	29/02/20																							
1.	Aayushi Umredkar	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
2.	Aditi Khode	A	P	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P																							
3.	Aishwarya Gour	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P																							
4.	Aniket Adase	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
5.	Anjali Lokhande	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P																							
6.	Ankit Pajai	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
7.	Anuradha Paralkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
8.	Anushree Muley	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
9.	Anushri Mohod	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
10.	Arati Nimbalkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
11.	Atharva Rathod	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
12.	Bhavana Poddar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
13.	Bhavesh Wadia	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
14.	Bhavish Kumar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							

15.	Daksha Ohri	P	P	A	A	P	P	P	A	P	A	A	P	A	P	A	P	A	P	P
16.	Dipti Rangu	A	A	P	P	P	A	A	P	P	P	P	A	P	P	P	A	P	P	P
17.	Harsh Warkade	P	A	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	
18.	Harshali Karpate	P	P	A	A	P	P	A	P	P	P	P	P	A	P	P	P	P	P	
19.	Harshul Mishra	P	P	P	P	P	P	A	P	P	P	P	A	A	A	A	P	P	A	P
20.	Isha Arghode	A	P	P	A	P	P	P	P	P	P	P	P	A	P	P	A	A	P	
21.	Ishwari Gawande	P	P	P	P	P	P	P	P	P	A	P	A	P	P	A	A	P	P	
22.	Janhvi Dhote	P	A	P	P	P	A	P	P	A	P	P	P	A	P	P	A	P	P	
23.	Janhvi Umate	A	P	P	P	A	P	P	P	P	A	P	P	P	A	P	P	A	P	
24.	Kalpana Patra	P	A	P	P	P	P	P	P	A	P	A	A	P	P	A	P	P	P	
25.	Khushi Kothale	A	P	P	A	A	P	P	P	P	A	P	P	P	A	P	P	A	P	
26.	Kinjal Kulkarni	P	A	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P	A	
27.	Komal Waghmare	P	A	P	P	P	P	P	A	P	P	A	P	P	A	P	A	A	P	
28.	Mahek Burchunde	P	A	P	P	P	A	P	P	P	A	P	P	P	P	P	P	A	P	
29.	Manisha Wasake	A	P	P	P	A	P	P	P	P	A	P	P	A	P	P	A	P	P	
30.	Mansi Gajbe	P	P	A	P	P	A	P	P	A	P	P	A	P	P	A	P	P	A	
31.	Muskan Choure	A	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	A	A	
32.	Muskan Varma	P	P	A	P	P	A	P	P	P	P	A	P	P	A	A	A	P	P	
33.	Nazish Jeevaji	P	A	P	P	A	P	P	P	A	P	A	P	P	P	P	A	P	A	
34.	Nishita Shendre	P	P	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P	
35.	Prachi Kapse	P	P	A	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	
36.	Prachi Navghare	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	

37. Pranjali Singh	P	P	P	P	A	P	P	A	P	P	A	P	P	P	A	P	P	P	P	A
38. Pratik Kumbhare	P	P	P	P	P	A	P	P	P	A	P	P	A	P	P	P	A	P	P	P
39. Pratiksha Palandurkar	P	P	A	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	A	P
40. Priya Waghmare	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P
41. Priyal Dhoke	P	P	A	P	A	P	P	P	P	A	P	A	P	P	A	P	P	P	P	A
42. Rahul Tirpude	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P
43. Rajashree Hatwar	A	P	P	A	P	P	P	A	P	A	P	P	P	P	P	P	P	P	P	A
44. Rashmi Agashe	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P
45. Renuka Mishra	P	P	P	A	P	P	A	P	A	P	P	P	P	P	A	P	P	P	P	A
46. Renuka Mohod	P	P	P	P	P	A	P	P	A	P	P	P	A	P	A	P	P	P	P	P
47. Ritika Jadhav	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	A	P	P	A
48. Rutugandha Ukey	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P
49. Sakshi Bobde	P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	A
50. Sakshi Chavhan	P	P	P	P	P	P	P	A	P	P	P	A	P	P	P	A	P	P	P	P
51. Sakshi Ghodmare	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
52. Sakshi Sarada	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
53. Sakshi Gorlawar	P	P	P	P	P	P	A	P	A	P	P	P	A	P	P	P	P	P	P	A
54. Sakshi Kulkule	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
55. Samip Tiwari	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
56. Samruddhi Pathak	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A
57. Samyak Khobragade	P	P	P	A	A	P	P	A	P	P	A	P	P	P	A	P	P	P	P	P
58. Samyak Moon	P	P	P	A	P	P	P	A	P	P	A	P	P	P	P	P	P	P	P	A

59.	Saptaparna Roy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																							
60.	Sarvesh Bagde	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	A	P																						
61.	Sharayu Sawane	P	P	P	P	P	P	A	P	P	A	P	P	A	P	A	P	P	P																						
62.	Sharvari Kshirsagar	P	P	P	P	P	A	P	A	P	P	P	P	P	P	P	P	P	P																						
63.	Sharwari Halmare	P	P	A	P	P	P	P	P	P	P	P	A	P	A	P	P	P	P																						
64.	Shivani Deshpande	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P																						
65.	Shreya Zilpe	P	P	A	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P																						
66.	Shruti Chopkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P																					
67.	Shruti Poddar	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P																						
68.	Shruti Renge	P	A	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P																						
69.	Shubhangi Sharma	P	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P	A	P																						
70.	Siddhi Waghmare	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P																					
71.	Sneha Chavhan	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P																						
72.	Sumelya Sheikh	P	P	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P																						
73.	Supriya Pandey	P	A	P	P	P	P	A	P	A	P	A	P	A	P	A	P	P	A	P																					
74.	Swati Sharma	P	P	P	A	P	P	P	P	A	P	P	A	P	A	P	P	P	P																						
75.	Tarushi Gaure	P	P	A	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P																						
76.	Teneshwari Hirapure	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P																						
77.	Utkarsha Tondare	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P																						
78.	Utkarsha Dhakate	P	P	P	P	P	P	P	P	P	P	A	P	A	P	P	P	P	P																						
79.	Vaishnavi Dhoble	P	P	P	P	A	P	P	A	P	P	A	P	A	P	A	P	P	P																						
80.	Vaishnavi Dube	P	P	A	P	P	P	P	A	P	A	P	P	P	P	P	P	P	P																						

81. Vaishnavi Mahure	P	P	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P																				
82. Vedanti Kali	P	P	P	P	A	P	P	A	P	A	P	A	P	A	P	P	A	P	P																			
83. Yashoda Wade	P	A	P	P	P	A	P	P	A	P	P	P	P	A	P	P	P	A	P																			



Deepthi  
Ms.D. Deepthi fymal.

**ATTENDANCE SHEET (2019-20)**

**S.S.E.S.A's Science College, Congress Nagar, Nagpur**

**Add on Course: Industrial Biotechnology (Session -2)**

**Class: Industrial Biotechnology**

Theory/ Practical: ✓

Month: Dec, Jan & February

Name of Lecturer: Ms. D. Deepthi S. Dnyanesh

Sr. No	Name of Student	14/12/19	21/12/19	04/01/20	11/01/20	18/01/20	25/01/20	08/02/20	15/02/20	22/02/20																									
1.	Aayushi Umredkar	P	P	P	A	P	P	A	P	P																									
2.	Aditi Khode	A	P	P	P	P	A	P	A	A																									
3.	Aishwarya Gour	P	P	P	P	P	A	A	P	P																									
4.	Aniket Adase	P	A	A	P	P	P	P	A	A																									
5.	Anjali Lokhande	D	P	P	A	P	P	A	P	P																									
6.	Ankit Pajai	D	P	P	P	P	P	P	P	P																									
7.	Anuradha Paralkar	P	P	P	P	P	P	P	P	P																									
8.	Anushree Muley	A	P	P	P	P	A	P	P	P																									
9.	Anushri Mohod	P	P	P	P	P	P	P	A	P																									
10.	Arati Nimbalkar	A	D	P	P	A	A	P	P	P																									
11.	Atharva Rathod	P	P	A	P	P	A	P	A	P																									
12.	Bhavana Poddar	P	P	P	P	P	P	A	P	A																									
13.	Bhavesh Wadia	P	A	P	A	P	P	P	P	P																									
14.	Bhavish Kumar	P	P	A	P	P	A	P	P	P																									



15.	Daksha Ohri	P	A	P	P	P	P	P	A	P																																									
16.	Dipti Rangu	A	P	A	P	A	P	A	P	A																																									
17.	Harsh Warkade	P	P	P	A	P	P	P	P	P																																									
18.	Harshali Karpate	P	P	P	P	A	A	P	P	P																																									
19.	Harshul Mishra	A	P	A	P	P	P	A	P	P																																									
20.	Isha Arghode	P	P	P	A	P	P	P	P	P																																									
21.	Ishwari Gawande	P	P	P	P	P	P	A	P	P																																									
22.	Janhvi Dhote	P	P	P	P	P	P	P	P	P																																									
23.	Janhvi Umate	P	P	P	A	P	A	P	P	P																																									
24.	Kalpana Patra	P	A	P	P	P	P	A	P	P																																									
25.	Khushi Kothale	P	P	P	P	A	P	P	P	P																																									
26.	Kinjal Kulkarni	P	P	P	P	P	P	A	P	P																																									
27.	Komal Waghmare	P	A	P	P	P	P	P	P	P																																									
28.	Mahek Burchunde	P	P	A	P	P	P	P	P	A																																									
29.	Manisha Wasake	P	P	P	P	A	P	P	A	P																																									
30.	Mansi Gajbe	P	A	P	P	P	D	P	P	P																																									
31.	Muskan Choure	P	P	P	A	P	P	A	P	P																																									
32.	Muskan Varma	P	P	P	P	A	P	P	P	P																																									
33.	Nazish Jeevaji	P	P	A	P	P	A	P	P	P																																									
34.	Nishita Shendre	P	P	P	A	P	P	A	P	P																																									
35.	Prachi Kapse	P		P	P	P	P	P	P	P																																									
36.	Prachi Navghare	P	P	P	A	P	P	P	P	P																																									

37.	Pranjali Singh	P	A	P	P	A	P	A	A	P																															
38.	Pratik Kumbhare	A	P	P	P	P	A	P	P	P																															
39.	Pratiksha Palandurkar	P	P	P	A	P	P	P	P	P																															
40.	Priya Waghmare	A	P	P	P	P	A	P	P	P																															
41.	Priyal Dhoke	A	P	P	P	A	P	P	P	A																															
42.	Rahul Tarpude	P	P	P	P	A	P	P	P	P																															
43.	Rajashree Hatwar	A	A	A	P	P	P	P	P	P																															
44.	Rashmi Agashe	P	P	P	A	P	P	P	A	P																															
45.	Renuka Mishra	A	P	P	P	P	P	P	P	P																															
46.	Renuka Mohod	P	P	P	A	A	P	P	A	P																															
47.	Ritika Jadhav	P	A	P	P	P	A	A	P	A																															
48.	Rutugandha Ukey	A	P	P	A	P	P	P	P	P																															
49.	Sakshi Bobde	P	P	P	A	P	P	P	P	P																															
50.	Sakshi Chavhan	P	P	P	P	P	A	A	P	P																															
51.	Sakshi Ghodmare	P	P	P	P	A	P	P	P	P																															
52.	Sakshi Sarda	A	A	P	P	A	P	P	P	P																															
53.	Sakshi Gorlawar	P	P	A	P	P	P	P	P	P																															
54.	Sakshi Kulkule	P	P	P	P	P	P	A	A	P																															
55.	Samip Tiwari	A	P	P	A	P	P	P	P	P																															
56.	Samruddhi Pathak	P	A	P	P	A	P	P	P	A																															
57.	Samyak Khobragade	P	P	P	P	P	A	P	P	P																															
58.	Samyak Moon	P	P	P	A	P	P	A	P	P																															

59.	Saptaparna Roy	P	P	P	A	A	P	A	P	P																		
60.	Sarvesh Bagde	A	A	P	P	P	A	P	P	P																		
61.	Sharayu Sawane	P	P	P	A	P	P	P	P	P																		
62.	Sharvari Kshirsagar	A	P	P	P	P	A	P	P	P																		
63.	Sharwari Halmare	P	P	P	A	P	P	P	P	P																		
64.	Shivani Deshpande	A	A	P	A	P	P	P	A	P																		
65.	Shreya Zilpe	A	P	P	P	P	P	A	P	P																		
66.	Shruti Chopkar	P	A	P	P	A	P	P	P	P																		
67.	Shruti Poddar	A	P	P	A	P	P	P	P	P																		
68.	Shruti Renge	P	P	P	P	A	P	P	P	P																		
69.	Shubhangi Sharma	P	P	P	A	P	A	P	P	P																		
70.	Siddhi Waghmare	P	A	P	P	P	P	P	P	P																		
71.	Sneha Chavhan	P	P	P	P	P	P	P	P	P																		
72.	Sumelya Sheikh	P	A	P	P	A	P	P	P	P																		
73.	Supriya Pandey	P	A	P	P	A	P	P	P	P																		
74.	Swati Sharma	A	P	P	A	P	A	P	P	P																		
75.	Tarushi Gaure	P	A	P	P	A	P	P	P	P																		
76.	Teneshwari Hirapure	P	P	P	P	P	P	A	P	P																		
77.	Utkarsha Tondare	P	P	P	A	P	P	P	P	P																		
78.	Utkarsha Dhakate	P	P	P	P	A	P	A	P	P																		
79.	Vaishnavi Dhoble	P	A	P	P	P	P	A	P	P																		
80.	Vaishnavi Dube	P	P	P	P	P	A	P	P	P																		

81.	Vaishnavi Mahure	P	A	P	P	A	P	P	P	P																		
82.	Vedanti Kali	A	P	P	P	P	P	P	A	P																		
83.	Yashoda Wade	P	P	P	P	A	P	P	P	P																		



Deepthi  
Ms. D. Deepthi Hymal

SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

UG Department of Biotechnology

EXAMINATION NOTICE

Date: 23/02/2020

All the students enrolled for Add on Course: **Industrial Biotechnology** for the session 2019-20 are informed that Theory and Practical Exam of the course is scheduled on 05/03/2020. All the appearing students are informed to remain present in Biotechnology Laboratory at 10:30 - 11:30AM AM for Theory Exam and at 12:30PM - 5:30PM for Practical Exam.



*Deepthi*  
Ms. Deepthi Hynal  
Course- Coordinator  
Add on Course

**List of the Students: Add on Course- Industrial Biotechnology  
(Session 2019-2020)**

Sr. No.	Name of Student	Signature
1)	Aayushi Umredkar	<i>Aayushi</i>
2)	Aditi Khode	<i>Aditi</i>
3)	Aishwarya Gour	<i>Aishwarya</i>
4)	Aniket Adase	<i>Aniket Adase</i>
5)	Anjali Lokhande	<i>Anjali</i>
6)	Ankit Pajai	<i>Ankit Pajai</i>
7)	Anuradha Paralkar	<i>Anuradha Paralkar</i>
8)	Anushree Muley	<i>Anushree Muley</i>
9)	Anushri Mohod	<i>Anushri Mohod</i>
10)	Arati Nimbalkar	<i>Arati Nimbalkar</i>
11)	Atharva Rathod	<i>Atharva Rathod</i>
12)	Bhavana Poddar	<i>Bhavana Poddar</i>
13)	Bhavesh Wadia	<i>B. Wadia</i>
14)	Bhavish Kumar	<i>Bhavish Kumar</i>
15)	Daksha Ohri	<i>Daksha Ohri</i>
16)	Dipti Rangu	<i>Dipti Rangu</i>
17)	Harsh Warkade	<i>Harsh Warkade</i>
18)	Harshali Karpate	<i>Harshali Karpate</i>
19)	Harshul Mishra	<i>Harshul Mishra</i>
20)	Isha Arghode	<i>Isha Arghode</i>
21)	Ishwari Gawande	<i>Ishwari Gawande</i>
22)	Janhvi Dhote	<i>Janhvi Dhote</i>
23)	Janhvi Umate	<i>Janhvi Umate</i>
24)	Kalpana Patra	<i>K. Patra</i>
25)	Khushi Kothale	<i>K. Kothale</i>

26)	Kinjal Kulkarni	<u>Kinjal</u>
27)	Komal Waghmare	<u>Waghmare</u>
28)	Mahek Burchunde	<u>Burchunde</u>
29)	Manisha Wasake	<u>Wasake</u>
30)	Mansi Gajbe	<u>Gajbe</u>
31)	Muskan Choure	<u>Choure</u>
32)	Muskan Varma	<u>Muskan</u>
33)	Nazish Jeevaji	<u>Jeevaji</u>
34)	Nishita Shendre	<u>Shendre</u>
35)	Prachi Kapse	<u>Kapse</u>
36)	Prachi Navghare	<u>Navghare</u>
37)	Pranjali Singh	<u>Singh</u>
38)	Pratik Kumbhare	<u>Kumbhare</u>
39)	Pratiksha Palandurkar	<u>Palandurkar</u>
40)	Priya Waghmare	<u>Waghmare</u>
41)	Priyal Dhoke	<u>Dhoke</u>
42)	Rahul Tirpude	<u>Tirpude</u>
43)	Rajashree Hatwar	<u>Hatwar</u>
44)	Rashmi Agashe	<u>Agashe</u>
45)	Renuka Mishra	<u>Mishra</u>
46)	Renuka Mohod	<u>Mohod</u>
47)	Ritika Jadhav	<u>Jadhav</u>
48)	Rutugandha Ukey	<u>Ukey</u>
49)	Sakshi Bobde	<u>Bobde</u>
50)	Sakshi Chavhan	<u>Chavhan</u>
51)	Sakshi Ghodmare	<u>Ghodmare</u>
52)	Sakshi Sarda	<u>Sarda</u>
53)	Sakshi Gorlawar	<u>Gorlawar</u>
54)	Sakshi Kulkule	<u>Kulkule</u>
55)	Samip Tiwari	<u>Tiwari</u>
56)	Samruddhi Pathak	<u>Pathak</u>

57)	Samyak Khobragade	<u>Khobragade</u>
58)	Samyak Moon	<u>Moon</u>
59)	Saptaparna Roy	<u>Saptar</u>
60)	Sarvesh Bagde	<u>S. Bagde</u>
61)	Sharayu Sawane	<u>Sawane</u>
62)	Sharvari Kshirsagar	<u>Kshirsagar</u>
63)	Sharwari Halmare	<u>Halmare</u>
64)	Shivani Deshpande	<u>Deshpande</u>
65)	Shreya Zilpe	<u>Zilpe</u>
66)	Shruti Chopkar	<u>Chopkar</u>
67)	Shruti Poddar	<u>Poddar</u>
68)	Shruti Renge	<u>Renge</u>
69)	Shubhangi Sharma	<u>Shubhang</u>
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71)	Sneha Chavhan	<u>Chavhan</u>
72)	Sumelya Sheikh	<u>Sumelya</u>
73)	Supriya Pandey	<u>Pandey</u>
74)	Swati Sharma	<u>Swati</u>
75)	Tarushi Gaure	<u>Gaure</u>
76)	Teneshwari Hirapure	<u>Hirapure</u>
77)	Utkarsha Tondare	<u>Tondare</u>
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79)	Vaishnavi Dhoble	<u>Dhoble</u>
80)	Vaishnavi Dube	<u>Dube</u>
81)	Vaishnavi Mahure	<u>Mahure</u>
82)	Vedanti Kali	<u>Vedanti</u>
83)	Yashoda Wade	<u>Yashoda</u>



Deepthi  
Ms.  Deepthi Hynad



**UG Department of Biotechnology**  
**Add-on Course: Industrial Biotechnology (Session 2019-20)**

**Theory Exam Multiple Choice Questions (MCQs) Pattern**

1. **What is the primary goal of industrial biotechnology?**
  - a) To study microorganisms
  - b) To apply biotechnological techniques for industrial applications
  - c) To develop new pharmaceuticals
  - d) To enhance agricultural productivity
  - **Answer: b**
2. **Which of the following is a common fermenter type used in industrial biotechnology?**
  - a) Petri dish
  - b) Erlenmeyer flask
  - c) Stirred-tank bioreactor
  - d) Test tube
  - **Answer: c**
3. **Upstream processing in fermentation technology involves:**
  - a) Product purification
  - b) Fermentation medium preparation
  - c) Product packaging
  - d) Waste disposal
  - **Answer: b**
4. **Bioprocess engineering primarily focuses on:**
  - a) Genetic modification of organisms
  - b) Designing and operating bioreactors
  - c) Environmental biotechnology
  - d) Medical biotechnology
  - **Answer: b**
5. **What is the main product of microbial fermentation used in the food industry?**
  - a) Antibiotics
  - b) Ethanol
  - c) Insulin
  - d) Lactic acid
  - **Answer: d**
6. **Which biofuel is primarily produced from plant oils?**
  - a) Biogas
  - b) Biodiesel
  - c) Bioethanol
  - d) Butanol
  - **Answer: b**
7. **The scale-up process in bioprocess engineering involves:**
  - a) Reducing production costs
  - b) Increasing the production volume
  - c) Improving product quality

- d) Developing new bioreactors
  - **Answer: b**
8. **What is the primary purpose of quality control in biofuel production?**
- a) To increase production speed
  - b) To ensure product meets industry standards
  - c) To develop new biofuels
  - d) To reduce environmental impact
  - **Answer: b**
9. **Which of the following is an advantage of using bioprocessing in industry?**
- a) High production costs
  - b) Low product yield
  - c) Sustainable and environmentally friendly
  - d) Limited scalability
  - **Answer: c**
10. **The downstream processing step in fermentation involves:**
- a) Growing microbial cultures
  - b) Optimizing fermentation conditions
  - c) Purifying the fermentation product
  - d) Designing fermenters
  - **Answer: c**
11. **Bioethanol is primarily produced through the fermentation of:**
- a) Lipids
  - b) Proteins
  - c) Carbohydrates
  - d) Nucleic acids
  - **Answer: c**
12. **Which parameter is NOT typically monitored in a bioreactor?**
- a) Temperature
  - b) pH
  - c) Oxygen concentration
  - d) Light intensity
  - **Answer: d**
13. **In bioprocess engineering, the term 'substrate' refers to:**
- a) The product of the bioprocess
  - b) The microorganism used
  - c) The medium the organism grows in
  - d) The equipment used
  - **Answer: c**
14. **Which of the following is NOT a type of biofuel?**
- a) Biogas
  - b) Biodiesel
  - c) Bioethanol
  - d) Biopolymer
  - **Answer: d**
15. **The process of removing cells from a fermentation broth is known as:**
- a) Filtration
  - b) Sterilization
  - c) Inoculation
  - d) Pasteurization

- **Answer: a**

16. **Which organism is commonly used for industrial ethanol production?**

- a) Escherichia coli
- b) Saccharomyces cerevisiae
- c) Bacillus subtilis
- d) Pseudomonas aeruginosa

- **Answer: b**

17. **Fermenters designed for large-scale production are typically:**

- a) Made of plastic
- b) Small and portable
- c) Made of stainless steel
- d) Disposable

- **Answer: c**

18. **Quality assurance in bioprocessing ensures:**

- a) Faster production times
- b) Consistent product quality
- c) Lower production costs
- d) Greater product variety

- **Answer: b**

19. **The term 'bioaugmentation' refers to:**

- a) Enhancing microbial activity by adding specific strains
- b) Reducing microbial contamination
- c) Increasing the bioprocess temperature
- d) Extending the fermentation time

- **Answer: a**

20. **Which gas is a common byproduct of anaerobic digestion in biogas production?**

- a) Oxygen
- b) Carbon dioxide
- c) Methane
- d) Nitrogen

- **Answer: c**

21. **Which of the following is a key challenge in industrial biotechnology?**

- a) High energy consumption
- b) Limited application areas
- c) Scalability of processes
- d) Lack of regulatory standards

- **Answer: c**

22. **The process of converting biomass into biofuels is known as:**

- a) Transesterification
- b) Fermentation
- c) Hydrolysis
- d) Bioconversion

- **Answer: d**

23. **In fermentation, the lag phase refers to:**

- a) The initial phase where cells adapt to the environment
- b) The phase of rapid cell growth
- c) The phase where cells die
- d) The phase of product formation

- **Answer: a**
- 24. **The first commercially produced plant secondary metabolite using bioreactor technology is**
  - a) Shikoin
  - b) Colchicines
  - c) Cercosporin
  - d) Cytokines
- **Answer: a**
- 25. **The lowest yield of ATP is in**
  - a) Fermentation
  - b) aerobic respiration
  - c) anaerobic respiration
  - d) same in a, b and c
- **Answer: a**



*Deepthi*  
**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course

# UG Department of Biotechnology

## Add-on Course: Industrial Biotechnology (Session 2019-20)

### Practical Exam Question Paper:

**Subject** : Industrial Biotechnology  
**Center** : S.S.E.S.A's Science College, Nagpur  
**Time** : 5 hrs per day  
**Dates** : 05/03/2020

**Max. Marks: 40**

- |  |    |
|--|----|
| Q.1. To Perform and monitor a microbial fermentation process | 10 |
| Q.2. To produce biofuel and test their quality.              | 10 |
| Q.3. Viva-Voce   | 10 |
| Q.4. Practical Record  | 10 |

**Total Marks 40**



*Deepthi*  
**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course

**UG Department of Biotechnology**  
**Add-on Course: Industrial Biotechnology (Session 2019-20)**

**OMR Answer Sheet**



**Shri Shivaji Education Society, Amravati's**  
**SCIENCE COLLEGE**  
 Congress Nagar, Nagpur-12 (M.S.), India



Accredited with CGPA of 3.51 at 'A+' grade by NAAC, Bangalore  
 A "College with Potential for Excellence" identified by UGC New Delhi.  
 Institutional Member of APQN  
 Recognized Centre for Higher Learning and Research  
 Mentor College under 'PARAMARSH Scheme', UGC, New Delhi

**U.G. DEPARTMENT OF BIOTECHNOLOGY**

**Add-on Course**  
**Course Exam Name: Industrial Biotechnology**

Name of Student:

...Aayushi Umredkar

Roll No.:

Session: 2019-20

Test Date: 25/02/2020

Max. Marks: 50

*Fogade*

Invigilator Signature

Obtained Marks:

50

**INSTRUCTIONS FOR FILLING THE SHEET**

- 1 This sheet should not be folded or crushed
- 2 Use only blue/ black ball point pen to fill the circles
- 3 Use of pencil is strictly prohibited.
- 4 Circles should be darkened completely and properly
- 5 Cutting and erasing on this sheet is not allowed
- 6 Do not use any stray marks on the sheet.
- 7 Do not use marker or white fluid to hide the mark

WRONG METHODS



CORRECT METHOD



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3	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	13	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	23	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	33	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	43	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	15	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	25	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	35	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	45	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	16	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	26	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	36	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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8	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	18	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	28	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	38	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	48	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	19	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	29	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	39	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	49	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	20	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	30	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	40	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	50	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**UG Department of Biotechnology**  
**Mark List: Add-on Course- Industrial Biotechnology**  
**(Session 2019-20)**

Sr. No.	Name of Student	Marks obtained out of 50 (Theory)	Marks obtained out of 40 (Practical)	Marks obtained out of 10 (Internal)	Total Marks 100	Grade
1)	Aayushi Umredkar	50	34	10	94	O
2)	Aditi Khode	48	35	10	93	O
3)	Aishwarya Gour	42	34	10	86	A+
4)	Aniket Adase	48	36	10	94	O
5)	Anjali Lokhande	50	37	10	97	O
6)	Ankit Pajai	48	36	10	94	O
7)	Anuradha Paralkar	48	36	10	94	O
8)	Anushree Muley	42	35	10	87	A+
9)	Anushri Mohod	48	35	10	93	O
10)	Arati Nimbalkar	42	34	10	86	A+
11)	Atharva Rathod	48	36	10	94	O
12)	Bhavana Poddar	50	38	10	98	O
13)	Bhavesh Wadia	50	37	10	97	O
14)	Bhavish Kumar	48	36	10	94	O
15)	Daksha Ohri	48	36	10	94	O

16)	Dipti Rangu	42	35	10	87	A+
17)	Harsh Warkade	50	38	10	98	0
18)	Harshali Karpate	50	34	10	94	0
19)	Harshul Mishra	48	35	10	93	0
20)	Isha Arghode	42	34	10	86	A+
21)	Ishwari Gawande	48	36	10	94	0
22)	Janhvi Dhote	50	38	10	98	0
23)	Janhvi Umate	48	36	10	94	0
24)	Kalpana Patra	50	38	10	98	0
25)	Khushi Kothale	50	37	10	97	0
26)	Kinjal Kulkarni	48	36	10	94	0
27)	Komal Waghmare	46	39	10	95	0
28)	Mahek Burchunde	42	34	10	86	A+
29)	Manisha Wasake	50	38	10	98	0
30)	Mansi Gajbe	48	36	10	94	0
31)	Muskan Choure	42	35	10	87	A+
32)	Muskan Varma	50	38	10	98	0
33)	Nazish Jeevaji	50	38	10	98	0



34)	Nishita Shendre	48	36	10	94	0
35)	Prachi Kapse	50	37	10	97	0
36)	Prachi Navghare	48	36	10	94	0
37)	Pranjali Singh	48	36	10	94	0
38)	Pratik Kumbhare	42	35	10	87	A+
39)	Pratiksha Palandurkar	46	39	10	95	0
40)	Priya Wagmare	42	34	10	86	A+
41)	Priyal Dhoke	50	38	10	98	0
42)	Rahul Tirpude	48	35	10	93	0
43)	Rajashree Hatwar	42	34	10	86	A+
44)	Rashmi Agashe	48	36	10	94	0
45)	Renuka Mishra	50	38	10	98	0
46)	Renuka Mohod	50	38	10	98	0
47)	Ritika Jadhav	50	34	10	94	0
48)	Rutugandha Ukey	48	35	10	93	0
49)	Sakshi Bobde	42	34	10	86	A+
50)	Sakshi Chavhan	48	36	10	94	0
51)	Sakshi Ghodmare	50	38	10	98	0

52)	Sakshi Sarda	48	36	10	94	0
53)	Sakshi Gorlawar	50	38	10	98	0
54)	Sakshi Kulkule	48	36	10	94	0
55)	Samip Tiwari	42	35	10	87	A+
56)	Samruddhi Pathak	44	35	10	89	A+
57)	Samyak Khobragade	46	39	10	95	0
58)	Samyak Moon	50	38	10	98	0
59)	Saptaparna Roy	50	34	10	94	0
60)	Sarvesh Bagde	48	35	10	93	0
61)	Sharayu Sawane	42	34	10	86	A+
62)	Sharvari Kshirsagar	48	36	10	94	0
63)	Sharwari Halmare	50	38	10	98	0
64)	Shivani Deshpande	50	37	10	97	0
65)	Shreya Zilpe	48	36	10	94	0
66)	Shruti Chopkar	44	35	10	89	A+
67)	Shruti Poddar	46	39	10	95	0
68)	Shruti Renge	48	36	10	94	0
69)	Shubhangi Sharma	46	39	10	95	0

70)	Siddhi Waghmare	42	34	10	86	A+
71)	Sneha Chavhan	50	37	10	97	0
72)	Sumelya Sheikh	48	36	10	94	0
73)	Supriya Pandey	50	38	10	98	0
74)	Swati Sharma	48	36	10	94	0
75)	Tarushi Gaure	42	35	10	87	A+
76)	Teneshwari Hirapure	50	34	10	94	0
77)	Utkarsha Tondare	48	35	10	93	0
78)	Utkarsha Dhakate	42	34	10	86	A+
79)	Vaishnavi Dhoble	48	36	10	94	0
80)	Vaishnavi Dube	46	39	10	95	0
81)	Vaishnavi Mahure	42	34	10	86	A+
82)	Vedanti Kali	48	36	10	94	0
83)	Yashoda Wade	42	35	10	87	A+



*Deepthi*  
**Ms. Deepthi Hynal**  
 Course- Coordinator  
 Add on Course



Shri Shivaji Education Society Amravati's  
**SCIENCE COLLEGE, CONGRESS NAGAR,  
NAGPUR**



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## CERTIFICATE

Mr./Ku. Aayushi Umredkar is awarded with certificate on successful completion of the course entitled, Certificate course in "Industrial Biotechnology"

Session 2019-20 under Add-on course conducted for 30 hours from 06/10/2019 to 21/02/2020 by Department of Biotechnology, SSESAs, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with '0' Grade.

Deepthi

Ms. Dipti Hynal

Coordinator, Department of Biotechnology



M. P. Dhore

Prof. M. P. Dhore

Principal, Science College, Nagpur



## **UG Department of Biotechnology**

### **Add on Course: Industrial Biotechnology (Session 2019-20)**

#### **Feedback form**

Thank you for participating in our Add on course Industrial Biotechnology. Your feedback is crucial in helping us improve the course and enhance your learning experience. Please take a few moments to complete this feedback form.

**Que. 1 How would you rate the overall quality of the Add on Course – Industrial Biotechnology**

- a) Excellent
- b) Good
- c) Average

**Que. 2 How well did the Add on Course – Industrial Biotechnology meet your expectations?**

- a) Exceeded expectations
- b) Met expectations
- c) Below expectations

**Que. 3 How effective were the course instructors in delivering the Add on Course – Industrial Biotechnology**

- a) Very effective
- b) Effective
- c) Ineffective

**Que. 4 How likely are you to recommend the Add on Course –Industrial Biotechnology to others?**

- a) Very Likely
- b) Likely
- c) Unlikely

**Que. 5 How satisfied are you with the practical sessions of the Add on Course – Industrial Biotechnology?**

- a) Very Satisfied
- b) Satisfied
- c) Dissatisfied

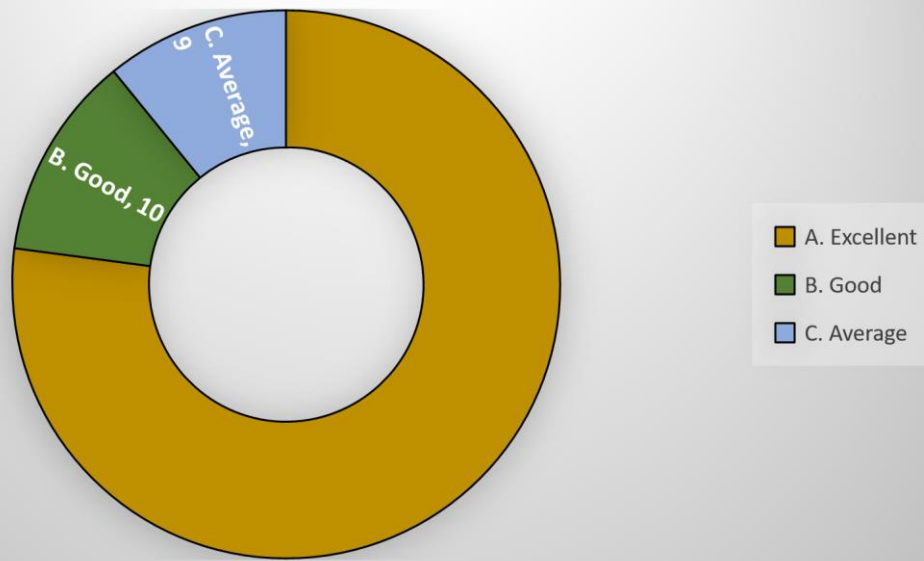
## UG Department of Biotechnology

### Add on Course: Industrial Biotechnology (Session 2019-20)

#### Feedback Response

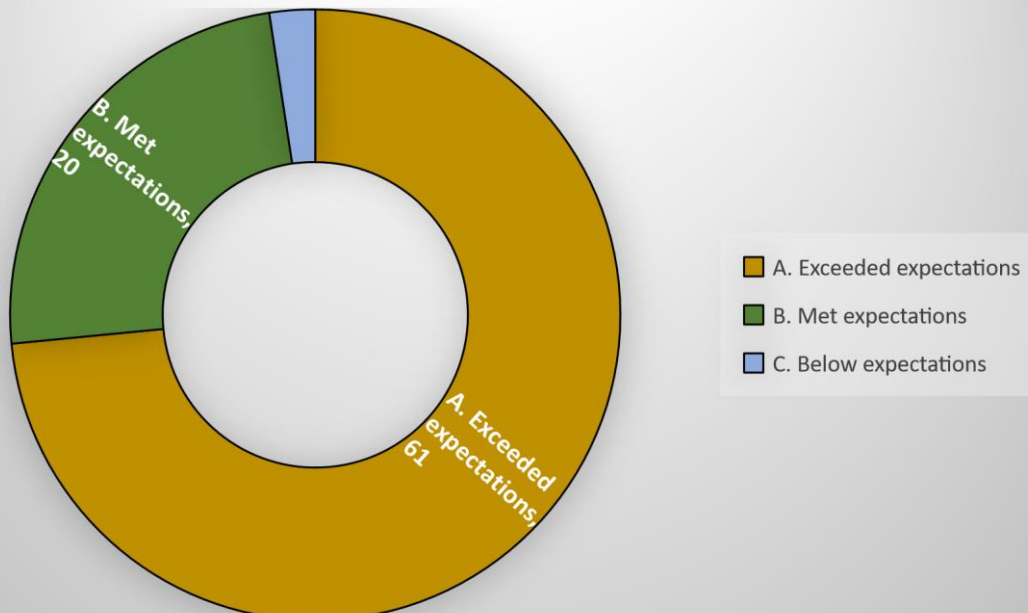
83 responses

Que. 1 How would you rate the overall quality of the Certificate Course - Industrial Biotechnology



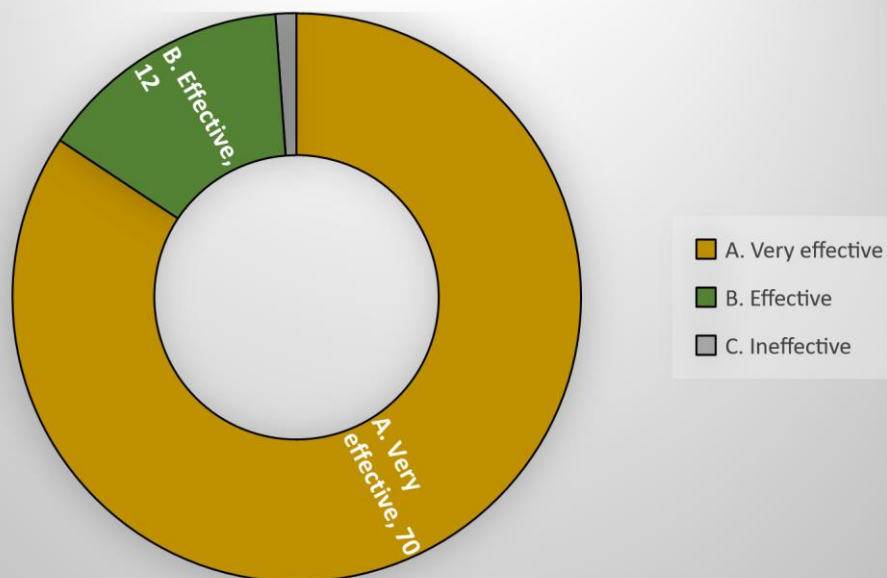
83 responses

Que. 2 How well did the Certificate Course - Industrial Biotechnology meet your expectations?



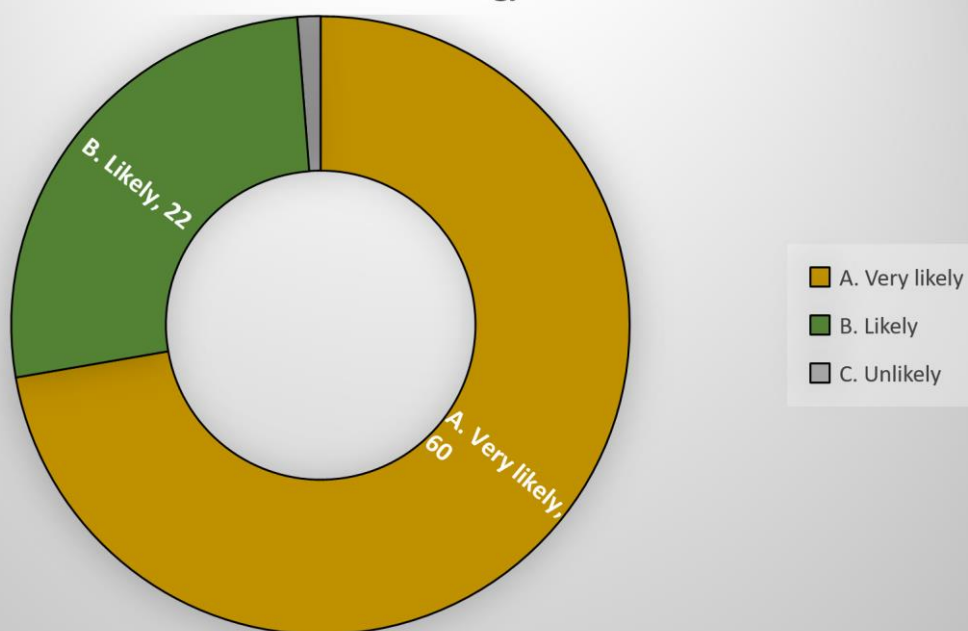
## 83 responses

Que. 3 How effective were the course instructors in delivering the Add on Course - Industrial Biotechnology



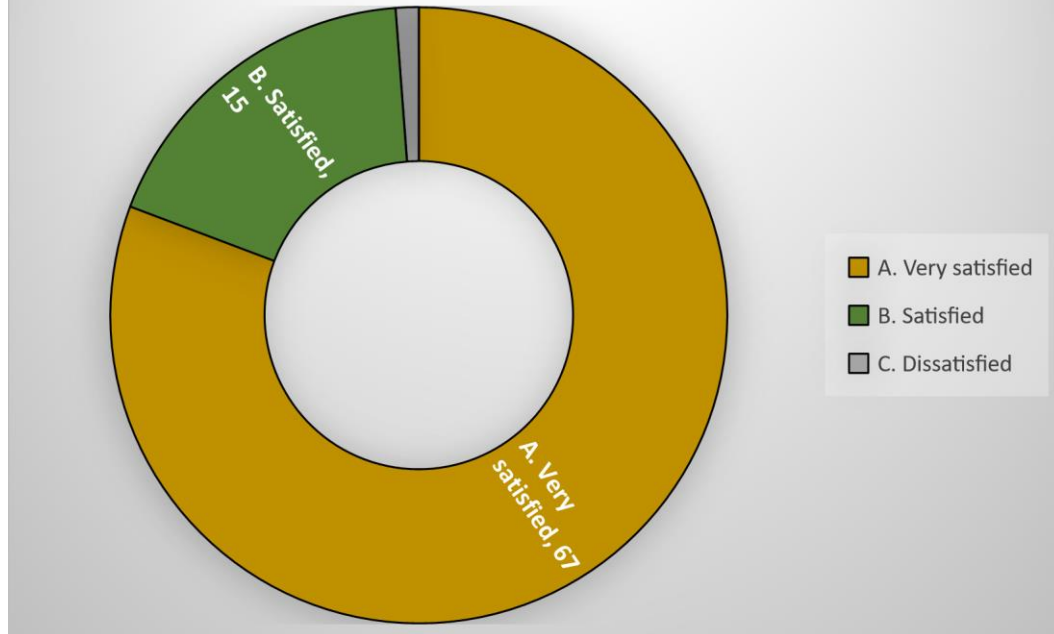
## 83 responses

Que. 4 How likely are you to recommend the Add on Course - Industrial Biotechnology to others?



## 83 responses

Que. 5. How satisfied are you with the practical sessions of the Certificate Course -Industrial Biotechnology



*Deepthi*

**Ms. Deepthi Hynal**  
Course- Coordinator  
Add on Course

*Amitabh Halder*

**Dr. Amitabh Halder**  
IQAC Coordinator  
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S. S. E. S. A. Science College  
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*Mahendra Dhole*

**Prof. Mahendra Dhole**  
Principal  
Principal  
S. S. E. S. Amravati's  
Science College, Nagpur.

