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 06th December 2019 to 21st 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.

Science College, Congress Nagar, Nagpur. SEAL

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

Science College, Congress Nagar, Nagpur. SEAL

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

Permitted

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.

Science College, Congress Nagar, Nagpur. SEAL

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	**Prof. Mahendra Dhore**	**Ms. Deepthi Hynal**
Coordinator	*Principal*	*Course- Coordinator*
Dept. of Microbiology	*Science College, Nagpur*	*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)

Science College, Congress Nagar, Nagpur
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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

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

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

Science College, Congress Nagar, Nagpur. SEAL

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.

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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

Balaram College, Congress Nagar, Nagpur. SEAL

Deepthi

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

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.

Science College, Congress Nagar, Nagpur. SEAL

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	
2)	Aditi Khode	
3)	Aishwarya Gour	
4)	Aniket Adase	
5)	Anjali Lokhande	
6)	Ankit Pajai	
7)	Anuradha Paralkar	
8)	Anushree Muley	
9)	Anushri Mohod	
10)	Arati Nimbalkar	
11)	Atharva Rathod	
12)	Bhavana Poddar	
13)	Bhavesh Wadia	
14)	Bhavish Kumar	
15)	Daksha Ohri	
16)	Dipti Rangu	
17)	Harsh Warkade	
18)	Harshali Karpate	
19)	Harshul Mishra	
20)	Isha Arghode	
21)	Ishwari Gawande	
22)	Janhvi Dhote	
23)	Janhvi Umate	
24)	Kalpana Patra	
25)	Khushi Kothale	

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

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

Science College, Congress Nagar, Nagpur. SEAL

Deepthi

Ms. D. Deepthi Hyrad

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

Science College, Congress Nagar, Nagpur. SEAL

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

Science College, Congress Nagar, Nagpur. SEAL

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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.
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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**

Pogade
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 ○ ○ ○ ●

	A	B	C	D
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	●	○	○	○
26	○	○	○	○
27	○	○	○	○
28	○	○	○	○
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31	○	○	○	○
32	○	○	○	○
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35	○	○	○	○
36	○	○	○	○
37	○	○	○	○
38	○	○	○	○
39	○	○	○	○
40	○	○	○	○
41	○	○	○	○
42	○	○	○	○
43	○	○	○	○
44	○	○	○	○
45	○	○	○	○
46	○	○	○	○
47	○	○	○	○
48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

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

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

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

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

SEAL

Deepthi

Ms. Deepthi Hynal
Course- Coordinator
Add on Course

Shri Shivaji Education Society Amravati's

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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, SSESA's, Science College, congress Nagar, Nagpur 440012.

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

Deepthi

Ms. Dipti Hynal

Coordinator, Department of Biotechnology

SEAL

Prof. M. P. Dhore

Principal, Science College, Nagpur