





#### RASHTRASANT TUKADOJIMAHARAJ NAGPUR UNIVERSITY Established by Government of Centrel Provinces Education Department by Notification No. 513 deted the 17 of August, 1933 a Interently State University governed by Manarashtra Public Universities Act, 2016 (Math. Act No. 91 of 2017)

DEPARTMENT OF LIFELONG LEARNING AND EXTENSION

Gurunanak Bhavan, University Campus, Amravati Road, Nagpur - 440 033. Phone : 2530860 E-mail : doll\_rtmnu@gmail.com

To, The Principal SSES Amt's Science College, Congress Nagar, Nagpur. . No.DOLLE/ 305/22 Dated : 12.08.2022

#### Subject : Sanction for Conducting Short Term Courses under Jeevan Shikshan Abhiyan on No Grant Basis. (2022-23)

Sir/Madam,

With reference to your proposal for conducting Short Term courses indicated below under Jeevan Shikshan Abhiyan of this Department, this is to inform you that your proposal has been accepted and your College has been granted permission to conduct the course on the following conditions:

#### Details of the Course

Sr. No.	Name of the Course	Name of Course Coordinator	Duration	Credit	No.of Candidates to be admitted	Fees to be Charged per Student	Fees to be Deposited With the Deptt.
1	Certificate Course in Environment and Water Management.	Prof. Yogita K. Meshram	43 hrs. (15Weeks)	2	20	1500/-	10%
2	Certificate Course in Ground Water Exploration.	Ms. P. B. Zamarkar	45 hrs. T- 36 hrs. P- 09 hrs.	2	40	1500/-	10%
3.	Certificate Course in Mushroom Cultivation.	Dr. R. H. Mahakhode	40 hrs. T- 20 hrs. P- 20 hrs.	2	40	1500/-	10%
4	Certificate Course in Immunology and Immunodiagnostics.	Dr. Deepthi Hynal	44 hrs. T- 36 hrs. P- 08 hrs.	2	20	1500/-	10%
5	Certificate Course in Fruit Processing and Wine Technology.	Dr. Pranita B. Gulhane	45 hrs. T- 37 hrs. P- 08 hrs.	2	20	1500/-	10%

Rules & Regulations of this Department regarding these courses should be strictly followed.

- 1. Owing to Covid-19 situations all the norms of Central & State Government and instructions by R.T.M. Nagpur University, Nagpur should be strictly followed.
- 2. This sanction is valid for this particular Batch only.
- 3. Fees for the course should be charged as per the norms prescribed.
- 4. Expenditure on the course should be incurred as per norms.
- Course should be started within a Month from the date of sanction.
  Please communicate your acceptance within a month and submit the Initial Report

6. Submit the List of Students admitted in the excel format attached herewith.

Also send a soft copy in CD/Pen drive.

Your's faithfu







Shir Shiveji Loucetion Society Amraveti's Science College, Congress Wagar, Nagpur -440012 A'- Grade reacredited by NAAC Bangaluru, & A College with Potential Excellence by UGC. Tel: +91 0-712 2423432 (o), Telefax: +51 712 2440966
Application for Admission to Skill based course.
1) Certificate course : 2) Diploma course: 3) Advance dip
To, The Principal, Science College Congress Nagar, Nagpur-12
R/Sir. I hereby apply for admission to the above course. I shall abide by the rules an regulations of the concerned department and college.
Signature of the applican
PARTICULARS TO BE FILLED IN BY THE CANDIDATE:
1) Full Name (Block Letters) <u>AYUSH</u> <u>SURENDRA</u> <u>BADWAIK</u> 2) Details of last exam. passed/failed/group/ percent marks obt. <u>B.Sc</u> <u>1<sup>st</sup>yeor</u>
3) Name of Skill base programme to apply : MUSHROOM CULTIVATION
4) Details of other courses Applied/admitted 5) Date of birth : 10 <sup>th</sup> MAY 2003 Contact No 9822222814 E-mail Qysbbadwaik 0@grail . CoM
E-mail.

6) Information of Fathe	r / Guardian: RATNANA	ALA SURENDRA	BADWAIK	000000
a) Full Name : RAIN	IAMALA SURENDRA D	BADWAIK t	) Occupation:	FARMER
c) Annual Income:	90,0001-	d) Contact No	90111585	551

e) E. mail. -----

Postal address of student for correspondence: <u>GANJIPETH GANDHIPUILA OPP</u>, <u>HANNMAN MANDIR BADWAIK</u> <u>BUILDING</u>, NAGPUR [440018]

Hadwaik.

Signature of the applicant

Declaration of Father or Guardian

I declare that the applicant is my son / daughter / ward and the particulars given above by him / her are correct and shall see that he / she observes all the rules of the college.

रतमाला वडवाइड Signature of the father / Guardian. Full Name. <u>RAINANALA</u> S. BADWAJK Address <u>GANJIPETH</u> GANDHIPUILA, NAGPUR

-> CamScanner

# RTM Nagpur University Department of Life Long Learning and Extension Skill Based Course

S.S.E.S. AMRAVATI'S SCIENCE COLLEGE CONGRESS NAGAR, NAGPUR, MAHARASHTRA 440012 Department of Botany

# <u>Certificate Course in</u> <u>Mushroom Cultivation</u> CURRICULUM AND DETAILED SYLLABUS

Course title	Certificate Course in Mushroom Cultivation
Qualification of the Candidate	H.S.S.C
Duration	03 Months

Sr. No.	Distribution of Marks	Marks (40)	
1.	Identification & comment on spots (5 spots)	10 ;	
2.	Project Submission	20 *	
3.	Field visit	05	
4.	Viva-voce	05	

Mahakhoda Dr. R.H. Mahakhode Dr. Rupani Gentinaktrode Assistant Professor Department of Botany SSES Amt's Science College Congress Nagar, hogpur-440012.



# SYLLABUS

Course com	ponents	Learning hours and mode of deliver
	oduction to mushrooms	
I.	Scope, importance and history	3 Weeks
II.	Classification of Mushroom	07 THEORY
III.	Identification of Edible & Poisonous Mushrooms	
IV.	Economic Importance of Mushroom	
Unit-II: Inf	rastructure	2 Weeks
I.	Designing & construction of Mushroom farms	03 THEORY
II.	Tools & Machinery	05 THEORY
III.	Sterilization and inoculation technique	
IV.	Mushroom compost	
	ltivation technique	2 Weeks
I.	Climate requirement	04 THEORY
II.	Bed/Bag preparation	
III.	Types of straw in Mushroom Cultivation	
IV.	Harvesting and post harvesting care	
Unit-IV: Ci	rop management & Health benefits	3 Weeks
I	Crop management	06 THEORY
II.	Role of fungicide and bactericide	
III.	Nutritional & Medicinal value of Mushroom	
IV	Mushroom care & handling	
List of Prac	tical: To study the identification of different types of Mushrooms	
I. 1	To study the Tools used in mushroom cultivation	
II. 1	To study the designing of mushroom unit	20 PRACTICAL
III. 1	to study the designing of musicon unit	
IV. 1	To study Sterilization technique	
V. 7	To study inoculation technique	
VI. F	Preparation of different types of compost	
VII. F	Pasteurization of compost	
	Aethods of selection of different straws	
VIII. N	Determinantion	
IX. T	o demonstrate Bed preparation	
IX. 7 X. 7	o demonstrate Bed preparation o demonstrate Bag preparation	
IX. T X. T	To demonstrate Bed preparation To demonstrate Bag preparation	
IX. 7 X. 7 XI. S	To demonstrate Bed preparation To demonstrate Bag preparation Selection of correct spawn The study the different types of fungicide	
IX. T X. T XI. S XII. T	To demonstrate Bed preparation To demonstrate Bag preparation Selection of correct spawn To study the different types of fungicide To study the different types of bactericide	
IX. T X. T XI. S XII. T XIII. T	To demonstrate Bed preparation To demonstrate Bag preparation Selection of correct spawn To study the different types of fungicide To study the different types of bactericide Ausbroom care & handling	
IX. T X. T XI. S XII. T XIII. T XIV. M	To demonstrate Bed preparation To demonstrate Bag preparation Selection of correct spawn To study the different types of fungicide To study the different types of bactericide	



# <u>Teaching Plan</u> <u>Certificate Course (10 Weeks)</u> <u>Mushroom Cultivation</u>

Weeks	Theory/Practical	Class/ Hours	Contents		
Week I	Theory 1	60 min.	Introduction & History of Mushroom		
	Theory 2	60 min.	Scope & Importance of Mushroom		
	Practical	60 min.	Introduction to different Mushrooms		
	Practical	60 min.	Morphology of Mushroom		
Week II	Theory 3	60 min.	Classification of Mushroom		
	Theory 4	60 min.	Identification of Edible Mushroom		
	Practical	60 min.	To study the identification of Edible Mushroom		
	Practical	60 min.	To study the identification of Poisonous Mushroom		
Week III	Theory 5	60 min.	Identification of Poisonous Mushroom		
	Theory 6	60 min.	Characters of Edible & Poisonous Mushroom		
	Practical	60 min.	To study the tools used in mushroom cultivation		
	Practical	60 min.	To study the designing of mushroom unit		
Week IV	Theory 7	60 min.	Economic importance of Mushroom		
	Theory 8	60 min.	Designing & construction of Mushroom farms		
	Practical	60 min.	To study sterilization technique		
	Practical	60 min.	To study inoculation technique		
Week V	Theory 9	60 min.	Different tools & machinery used in mushroom cultivation		
	Theory 10	60 min.	Sterilization & Inoculation technique		
	Practical	60 min.	Preparation of different types of compost		
	Practical	60 min.	Pasteurization of compost		
Week VI	Theory 11	60 min.	Climate requirement		
	Theory 12	60 min.	Bed preparation		
	Practical	60 min.	Selection of correct spawn		
	Practical	60 min.			

Week VII	Theory 13	60 min.	Bag preparation	1
	Theory 14	60 min.	Harvesting & Post harvesting care	
	Practical	60 min.	To demonstrate Bed preparation	-
	Practical	60 min.	To demonstrate Bag preparation	ŝ
				\$
Week VIII	Theory 15	60 min.	Crop management	
	Theory 16	60 min.	Role of fungicide	
	Practical	60 min.	To study the different types of fungicide	
	Practical	60 min.	To study the different types of bactericide	
***	1			
Week IX	Theory 17	60 min.	Role of bactericide	
	Theory 18	60 min.	Nutritional value of mushroom	
	Practical	60 min.	Mushroom care & handling	]
	Practical	60 min.	Field visit	
Week X	Theory 19	60 min.	Medicinal value of mushroom	-
	Theory 20	60 min.	Project writing	*
	Practical	60 min.	Spotting on different types of Mushroom	·
	Practical	60 min.	Workshop on Mushroom Cultivation	

Mahakhda

Dr. R.H. Mahakhode Course Coordinator Dr. Bepalio HBMahigkhode Assistant Professor Department of Botany SSES Amt's Science College Congress Nagar, Nagpur-440012.



**Department of Botany** SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

## Notice

The Department of Botany is conducting **Certificate Course on Mushroom Cultivation** (Skill Base Course) under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23. Interesting students of B.Sc. Part I & Part II should registered themself in early and contact to the Course Coordinator Dr. R. H. Mahakhode immediately.

Course	Admission Fees
Mushroom Cultivation	Rs. 1500/-

Falakokhode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany

5

Prof. R.N. Deshmukh HOD Dept. of Botany



### Department of Botany SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation Students List

Sr. No	Name of Students
1	Badwaik Ayush
2	Batke Manoj Abhishek
3	Bawankar Prakash Vaidehee
4	Bhandare Prakash Kopal
5	Chipate Pravin Tanaya
6	Dutta Soni Raven
7	Ghadge Ramu Siddhant
8	Giri Devendra
9	Hadke Rashjrapal Tanmayee
10	Khobragade Komal
11	Mahule Nitin Yash
12	Mishra Rajiv Khushi
13	Mohod Sanjay Madhavi
14	Muley Shrikant Avantika
15	Nagare Pradip Tanmay
16	Pandey Bipin Divya
17	Raut Prabhakar Mansi
18	Roria Singh Ranvir Madhavi
19	Shinde Vijay Akansha
20	Singh Rakesh Divya

Mahakhoda

Dr. R.H. Mahakhode Course Coordinator Dr. Rupali H. Mahakhode Assistant Professor Department of Botany SSES Autor Chara College Congress Nag. Jacepur-440012.



:

### S.S.E.S.A's Science College, Congress Nagar, Nagpur Department of Botany <u>SKILL BASE PROGRAMME</u> (2022-2023)

#### TIME TABLE

w.e.f. 01/0/9/2022

# **Certificate Course: Mushroom Cultivation**

	Time			
Days	Theory Classes	Practical Classe		
Monday	3:15 pm-4:15pm	-		
Tuesday	3:15 pm-4:15pm	-		
Wednesday	-			
Thursday	-	-		
Friday		3:15 pm-4:45pm		
Saturday		-		

Mahalched

Course Coordinator Dr. Rupali H. Mahakhodde S.S. A.S. Attan Science College, Depandement of Botany SSES Amt's Science College Congress Nagar, Nagpur-440012. Course Coordinator Dr. A.D. Bobdey S.S.E.S.A's Science College, Nagpur



**Department of Botany** SKILL BASED PROGRAMME (2022-2023) **Certificate Course: Mushroom Cultivation** 

# TWO DAYS WORKSHOP

### Notice

### Date: 21/03/2023

Department of Botany will be organizing Two Days Workshop on "Mushroom Cultivation" and power point presentation by Dr. Abhimanyu Rao Dongarwar, Expert, Sky Mushroom, Nagpur for the registered students of Certificate Course under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 to inculcate Entrepreneurship Skill and Self Employment amongst the students.

Date: 23-24 March 2023 Time: 1:00 pm Venue: Botany Lab

Prof. R.N. Deshmukh HOD Dept. of Botany

Flahakbode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany

Duore

Prof. M.P. Dhore Principal Science College, Nagpur



Department of Botany

SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

#### WORKSHOP

# ATTENDANCE

Date: 23-24/03/2023

Sr.	Name of Students	Class	Group	Signature
No		BSC - II	CBZ	Hadwaik-
1	Badwaik Ayush		CBZ	Shh
2	Batke Manoj Abhishek	BSC-II	CBM	Mounter.
3	Bawankar Prakash Vaidehee	BSC - II		
4	Bhandare Prakash Kopal	BSC - II	CBG	(Kopul
5	Chipate Pravin Tanaya	BSC - II	CBM	Thipate
	Dutta Soni Raven	BSC - I	CBZ	Loven
6		BSC - I	CBM	S.R. Shadge
7	Ghadge Ramu Siddhant	BSC – II	CBZ	Deventures
8	Giri Devendra	BSC - II	CBZ	Janmay et ad ku
9	Hadke Rashjrapal Tanmayee		CBZ	Kennet
10	Khobragade Komal	BSC - III	CBG	Dalmer
11	Mahule Nitin Yash	BSC - III	CBC	Quit
12	Mishra Rajiv Khushi	BSC - III	CBG	-Musmohe
13	Mohod Sanjay Madhavi	BSC - III	CBG	
14	Muley Shrikant Avantika	BSC - I		Julie-
15	Nagare Pradip Tanmay	BSC - I	CBM	Klagare
16	Pandey Bipin Divya	BSC - II	CBZ	Deander
	Raut Prabhakar Mansi	BSC - III	CBM	Paut
17		BSC - II	CBZ	Bight.
18	Roria Singh Ranvir Madhavi	BSC - I	CBZ	Agende
19	Shinde Vijay Akansha	BSC - II	CBM	Thingh
20	Singh Rakesh Divya	B2C - II	CDIN	20



**Department of Botany** SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

### GUEST LECTURE

### **Notice**

Date: 17/11/2022

The students who are admitted in Mushroom Cultivation Certificate Course (Skill Base Course) under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 are hereby informed that department of Botany is organizing Guest lecture, by Dr. Abhimanyu Rao Dongarwar, Expert, Sky Mushroom, Nagpur on 18<sup>th</sup> November at 12.30 pm in C-1 Class room. All Students are informed to remain present for the same.

abethede

6

Dr. R.H. Mahakhode Course Coordinator Dr. Bunali H Mahakhode Assistant Professor Department of Botany SES Amt's Science College Congress Nagar, Nagpur-44001...

Prof. R.N. Deshmukh HOD Dept. of Botany SSLS Amt's Science College, Congress regist, Register 12



### Department of Botany

### SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

### **GUEST LECTURE**

#### ATTENDANCE

Date: 18/11/2022

Sr. No	Name of Students	Class	Group	Signature
1	Badwaik Ayush	BSC - II	CBZ	producaite.
2	Batke Manoj Abhishek	BSC- II	CBZ	Abbield
3	Bawankar Prakash Vaidehee	BSC - II	CBM	(Meanvanket
4	Bhandare Prakash Kopal	BSC - II	CBG	Renal
5	Chipate Pravin Tanaya	BSC - II	CBM	Fripate
6	Dutta Soni Raven	BSC - I	CBZ	(Paren)
7	Ghandge Ramu Siddhant	BSC - I	CBM	S.R. Shadge
8	Giri Devendra	BSC – II	CBZ	Deventi
9	Hadke Rash}rapal Tanmayee	BSC - II	CBZ	Janmaye Hadke
10	Khobragade Komal	BSC - III 🗸	COZ	Komal
11	Mahule Nitin Yash	BSC - III 🗸	CBG	Daluela -
12	Mishra Rajiv Khushi	BSC - III 🗸	CBX	P-1.
13	Mohod Sanjay Madhavi	BSC - III 🗸	CBG	Monohox
14	Muley Shrikant Avantika	BSC - I	CBG	A.S.muley.
15	Nagare Pradip Tanmay	BSC - I	CBM	Wayan
16	Pandey Bipin Divya	BSC - II	CBZ	Blander
17	Raut Prabhakar Mansi	BSC - III 🖌	CBM	Meant
18	Roria Singh Ranvir Madhavi	BSC - II	CBZ	45144
19	Shinde Vijay Akansha	BSC - I	CBZ	Athide
20	Singh Rakesh Divya	BSC - II	свм	Fiergh



**Department of Botany** SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

# **GUEST LECTURE 2**

### **Notice**

Date: 13/03/2023

The students who are admitted in Mushroom Cultivation Certificate Course (Skill Based Course) under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 are hereby informed that department of Botany will be organizing Guest lecture, by Dr. Abhimanyu Rao Dongarwar, Expert, Sky Mushroom, Nagpur on 15<sup>th</sup> March at 1.00 pm in C-1 Class room. All Students are informed to remain present for the same.

Prof. R.N. Deshmukh HOD Dept. of Botany

Mahakhade

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany

Mouse

Prof. M.P. Dhore Principal Science College, Nagpur



**Department of Botany** SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

#### **GUEST LECTURE 2**

ATTENDANCE

Date: 15/03/2023

Sr. No	Name of Students	Class	Group	Signature
ì	Badwaik Ayush	BSC - II	CBZ	Fadwaitz.
2	Batke Manoj Abhishek	BSC- II	CBZ	Alle
3	Bawankar Prakash Vaidehee	BSC - II	CBM	Deener ,
4	Bhandare Prakash Kopal	BSC - II	CBG	Kopula
5	Chipate Pravin Tanaya	BSC - II	CBM	Thipate
6	Dutta Soni Raven	BSC - I	CBZ	Caren
7	Ghadge Ramu Siddhant	BSC - I	CBM	S.R. Ghadge
8	Giri Devendra	BSC – II	CBZ	Daronet
9	Hadke Rashjrapal Tanmayee	BSC - II	CBZ	Janmayee Hadke
10	Khobragade Komal	BSC - III	CBZ	120mt
11	Mahule Nitin Yash	BSC - III	CBG	Dalus :
12	Mishra Rajiv Khushi	BSC - III	CBZ	Or f.
13	Mohod Sanjay Madhavi	BSC - III	CBG	mmolder
14	Muley Shrikant Avantika	BSC - I	CBG	Will'E.
15	Nagare Pradip Tanmay	BSC - I	CBM	Riquan
16	Pandey Bipin Divya	BSC - II	CBZ	Spandert
17	Raut Prabhakar Mansi	BSC - III	CBM	Deant
18	Roria Singh Ranvir Madhavi	BSC - II	CBZ	ASTA.
19	Shinde Vijay Akansha	BSC - I	CBZ	Asprel.
20	Singh Rakesh Divya	BSC - II	CBM	Dingh



**Department of Botany** SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

### **GUEST LECTURE 3**

## Notice

Date: 13/03/2023

The students who are admitted in Mushroom Cultivation Certificate Course (Skill Based Course) under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 and hereby informed that department of Botany will be organizing Guest lecture, by Dr. Abhimanyu Rao Dongarwar, Expert, Sky Mushroom, Nagpur on 16<sup>th</sup> March at 12.00 pm in C-1 Class room. All Students are informed to remain present for the same.

0

(:

Prof. R.N. Deshmukh HOD Dept. of Botany

Franchakhode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany

Moure

Prof. M.P. Dhore Principal Science College, Nagpur



### **Department of Botany** SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

### **GUEST LECTURE 3**

### ATTENDANCE

Date: 16/03/2023

Sr. No	Name of Students	Class	Group	Signature
1	Badwaik Ayush	BSC - II	CBZ	Hodrocite.
2	Batke Manoj Abhishek	BSC- II	CBZ	All
3	Bawankar Prakash Vaidehee	BSC - II	CBM	apouler.
4	Bhandare Prakash Kopal	BSC - II	CBG	Woner.
5	Chipate Pravin Tanaya	BSC - II	CBM	Inipate
6	Dutta Soni Raven	BSC - I	CBZ	Parten
7	Ghadge Ramu Siddhant	BSC - I	CBM	5. R. Ghadge
8	Giri Devendra	BSC – II	CBZ	Deveniz.
9	Hadke Rashjrapal Tanmayee	BSC - II	CBZ	Janmayee Hadke
10	Khobragade Komal	BSC - III	CBZ	Komete
11	Mahule Nitin Yash	BSC - III	CBG	Palme
12	Mishra Rajiv Khushi	BSC - III	CBZ	Qit.
13	Mohod Sanjay Madhavi	BSC - III	CBG	-Mumolust
14	Muley Shrikant Avantika	BSC - I	CBG	attule
15	Nagare Pradip Tanmay	BSC - I	CBM	Wagare
16	Pandey Bipin Divya	BSC - II	CBZ	Deandurt
17	Raut Prabhakar Mansi	BSC - III	CBM	BRant
18	Roria Singh Ranvir Madhavi	BSC - II	CBZ	The second
19	Shinde Vijay Akansha	BSC - I	CBZ	Ashmele
20	Singh Rakesh Divya	BSC - II	CBM	Tingh

.

atil



rede																										
Teacher: Dr. R.H. Mahakher	a							Τ	1	Τ	Τ						Τ	Т	Т	Τ		7			<	
Mah	101								_			_		_				-		-	20	-			2	
Ï	20	ולייט	9	¢	a	¢ :	T	2 (		-	-		a (		-	I.	-		20		-	-		2	5	
è	19	13.05	Æ	9	a	9	2	2 4		T	51	0			9	_	9				-	_	11	17	1	
C	18	20.7	9	9	a	0	20	2	0	0,	0	t	2		-	-	H L	-	-	H C	6	t	Jan		Jah	
ler:	17	20.9	a	9	0	a	¢	4	a.	2	-			4	9	d	2			20			ALL		C.H.	
r. Teach	16	10-18	9	a	a	Ð.	e '	-	-	H	2	9	-			-					IC	-	1	到	N. K.H. Julanar	
Shri Jvaji Education Society Amravati's Science Compe, Nagpur. Department of Botany SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation Attendance Sheet	15	10.08	A	0	a	9	a	a	¢	9	9	9	0	C	9	¢	a	<u>`</u>	7	75				· _	A,	
e, n	14	21.9	d	d	H	9	0	0	0	0	a	9	0	2	đ	9	I	2	20	20	20	-				
Education Society Amravati's Science CC Department of Botany SKILL BASE PROGRAMME (2022-2023) <b>Certificate Course: Mushroom Cultivation</b> Attendance Sheet	13	215	a	0	d	C	0	0	2	0	2	2	t	2	ç	0	0	9			25	I				
ience / 22-20 <b>Cultiv</b>	12	11.22	d	đ	d	e	2	Π	0	t	0	¢	a	đ	0	0	0	9	2	2:	30	-				
ci's Sc totan IE (20 <b>oom</b>	11	10.12	۵	d	d	d	¢	d	٩	a	d	Р	C	d	a	¢	d	a	2	a	t o	L				
ucation Society Amravati's Science Co Department of Botany SKILL BASE PROGRAMME (2022-2023) ertificate Course: Mushroom Cultivatio Attendance Sheet	10	11.51	đ	e	d	9	d	D	9	9	9	d	đ		A	D	d_	9	9			2				
ty Am timen ROGR se: N	6	11.8	6	é	e	0	P	9			đ	and the second second	-	9	-	-						2				
Societ Depar SE PF Cour Atto	~	11.2	-		A	-	9	9	d		9	d o	0	100000		ġ	d d	4			90	_				
tion S LL BA LL BA	7	60.22			d d		C d	dd	4 H		99		d	d	d		4	2				4 4				
ski Ski Certif	5 6	60.02 50.51	10000			-	a	b	P 1	d	d	-	-		-	đ	4	đ			-	7				
ivaji E	4	50.8	-	-	1	-	9	d	9	d	e	-	-	-	a	d	d	9	d	t	2	d				
Ē	6	50.7	+	-	-	-	a	c	0	6	d	0	9	· a	. a	t	d	d	d	a	a	م				
S	5	60.9	0	-0	-	- 0	d	d	9	0	d	-	-		-	0	D	a	d	d		D				
	-	50.0	50	- 0	- 0	0	9	0	6	C	9	-	0	9	0	0	C	d	9	5	a	9				
Theory/Practical: Theory		Name of the Student	Badwaik Surendra Avush	Batke Manoi Abhishek	Bawankar Prakash Vaidehee	Bhandare Prakash Kopal	Chipate Pravin Tanaya	Dutta Soni Raven	Ghadge Ramu Siddhant	Giri S. Devendra	Hadke Rashirapal Tanmayee	Khohragade Liladhar Komal	Mahule Nitin Yash	Mishra Raiiv Khushi	Mohod Saniav Madhavi	Muley Shrikant Avantika	Nagare Pradip Tanmay	Pandev Bipin Divya	Raut Prabhakar Mansi	Madhavi Roria Singh	Shinde Vijay Akanksha	Singh Rakesh Divya				
heory/Pract		Sr. No	1 Badwai	2 Batke N	+	4 Bhanda	5 Chipate	6 Dutta S	7 Ghadge	8 Giri S.	9 Hadke	-	-	-	-		-	16 Pandev	-	18 Madhav	19 Shinde	20 Singh F				
F	4				_					1	_		_			1			1	1	Г	14				

CamScanner

Teacher: Dr. R. H. Mahaklude Total 20 19 18 17 16 Shri Shivaji Education Society Amravati's Science Col. de, Nagpur. 15 14 **Certificate Course: Mushroom Cultivation** 13 SKILL BASE PROGRAMME (2022-2023) Prepartial 12 Department of Botany Attendance Sheet Ξ 22222 200 0 ¢ a d J 10 de d 9 21.03 9 H 9 4 9 9 9 9 9 d a # đ A 0 C 9 0 d 9 J 0 9 Q 0 a 9 50.02 6 C ď da 9 9 Ł C C T T d ¢ 0 d a d D 20.51 ~ d 200 a Q ٩ d d c ٩ t d d d d 9 13.03 A d d d T A đ 2 A A 9 I A d C d d D E0.2 0 d 0 d 9 9 Ga C 9 đ D 9 d D d A 0 0 80.9 A E d 9 0 2 Æ 9 d 00 ¢ A Q 0 C 0 6 0 d 9 a 9 0 0 20.80 0 4 4 0 Q ¢ AC 20 C 9 0 0 0 A d 0 D d A d 27.02 3 d d d A C Cd 4 C 9 d d p p D P PA A P d d ¢ ta 0 0 0 51.05 2 20 0 G 0 9 a C 20.02 0 Hadke Rashjrapal Tanmayee Khobragade Liladhar Komal Bawankar Prakash Vaidehee Muley Shrikant Avantika Theory/Practical: Theory Bhandare Prakash Kopal Ghadge Ramu Siddhant Mohod Sanjay Madhavi Shinde Vijay Akanksha Badwaik Surendra Ayush Chipate Pravin Tanaya Nagare Pradip Tanmay Name of the Student Raut Prabhakar Mansi Madhavi Roria Singh Batke Manoj Abhishek Mishra Rajiv Khushi Singh Rakesh Divya Pandey Bipin Divya Mahule Nitin Yash Dutta Soni Raven Giri S. Devendra 19 18 20 Sr. 0 S 9 10 12 16 3 4 13 17 8 6 = 14 15

CamScanner

acher: Der. R.H. J	16 17 18 19 20 <sup>1 0tal</sup>	Ea 200	c	d	P P	P	q	P P	A	đ	f	PP	٩	ď	ď	a	ð	9	A	d ;	-	P-17	(Jor. R. H. Madakhade)
Department of Botany SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation Attendance Sheet	15	E0.71	+	ġ.	٩	¢	Р	ď		-	A	_		d			-	-	-+			H -	Aller .
()	3 14	E0.01	+	+	-			đ		Ð			d Q	A .	d			-	-	-		_	Πě
Department of Botany SKILL BASE PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation Attendance Sheet	12 13	3.03 20.5	-	+		P P		d d	P				ď	d o			-	-	-			2	
otany (202: om Cu	11	20-21		9		P	P 1	d d	P P	d d	99	PA	-	PF	đ	-	Ч					d	
Department of Botany ASE PROGRAMME (20) • Course: Mushroom C Attendance Sheet	10	20.01					d		d				P		f f	H H	-	D D	-		-	_	
tment tOGR/ se: M se: M	6	3.02	-		-			9	-	P			A		Ą		9			5		d H	
SE PR Cours	80	5.15	0	C	đ	d	a	-	-	Q	E	đ	d		β	d	9		-		-	4	
LL BA ILL BA icate	7	11.81	-	D	-	-	0	0				ð		D	d	Q	2	D	2	9	в	2	
SKI	5 6	11.11	PA	-	-			-	4	A		a	-	9	đ	d	cll	d	a	d	2	Q	
Ū		50.82		A P	d		A P	d	H O		d	H O		d t	A	d	H C	-	Ð	-	-	d	
	e	60.91	d	d				P P	90		A P	d d	A P	D C	P P	A A			9	-	-	2	
	2	Bo.B	a	d	-	A	d	A	d	0	d	9 q	C	d	P J	P	P P		βP		B	PA	
	1	50.7	9	0	0	a	d	0		0	d	C		C	P	C	C	9	0	99	D D	0	
Theory/Practical: Prectical		Name of the Student	Badwaik Surendra Ayush	Batke Manoj Abhishek	Bawankar Prakash Vaidehee	Bhandare Prakash Kopal	Chipate Pravin Tanaya	Dutta Soni Raven	Ghadge Ramu Siddhant	Giri S. Devendra	Hadke Rashjrapal Tanmayee	Khobragade Liladhar Komal	Mahule Nitin Yash	Mishra Rajiv Khushi	Mohod Sanjay Madhavi	Muley Shrikant Avantika	Nagare Pradip Tanmay	Pandey Bipin Divya	Raut Prabhakar Mansi	Madhavi Roria Singh	Shinde Vijay Akanksha	Singh Rakesh Divya	
The	Sr.	No	-	2	m	4			7	8	9 F	10 k	11 N	12 N	13 N	14 N.	15 N	16 P2	R	M	Sh	Si	

CamScanner

Shri Shivaji Education Society Amravati's SCIENCE COLLEGE, Congress Nagar, Nagpur.

# SKILL BASED COURSE EXAMINATION (2022-2023)

#### **Certificate Course: Mushroom Cultivation**

Date: 18/04/2023

#### NOTICE

All the registered students of Skill Based Course on Mushroom Cultivation under Department of Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 are hereby informed that the theory examination is to be scheduled on 21/04/2023 (Friday) at 10:30 am to 11:30 am in Botany Laboratory at our college centre. All Students should be present in the laboratory before 10 mins. of scheduled time of examination.

Mahakhade

Dr. R.H. Mahakhode Course Coordinator Skill Based Course Department of Botany

DrRRupali H. Mahakhode Addistant Professor Department of Botany SSSS Amit's Science College Cougess Nagar, Nagar-440012



Shri Shivaji Education Society Amravati's SCIENCE COLLEGE Congress Nagar Nagpur.

#### Department of Botany

Skill Based Course (2022-23) Mushroom Cultivation Certificate Course

Seat No.

#### Date: 21/04/2023

Marks- 30

N.B.:- (1) There are 10 Practical based objective type questions.

(2) All questions are compulsory and each question carry 2 marks.

#### Q. Choose the correct option from the following questions.

1. Which of the following is the most popular variety of mushroom cultivated in India?

- o Agaricus campestris
- o Agaricus bisporus
- o Volvariella
- o Pleurotus

2. Which of the following is a step involved in cultivation of button mushrooms?

- o Casing
- o Composting
- o Spawning
- o All of these

3. Which method is used for the sterilization of straw?

- o Chemical sterilization
- o Dry heat sterilization
- Wet heat sterilization
- o All of the above.

4. Identify the mushroom.



- o Button mushroom
- Oyster mushroom
- Crab mushroom
- o Lobster mushroom

5. Which component accounts for approximately 90 percent of mushrooms?

- o Protein
- o Water
- o Oxygen
- o Nitrogen

6. An edible mushroom is a mushroom that can potentially be safely eaten.

- o True
- o False



1

#### 7. How do mushrooms reproduce?

- o Spores
- Seeds
- o gametes
- Mycelium

8. When does the life cycle of mushrooms start?

- When fully-grown mushrooms produce spores
- When fully-grown mushrooms develop flowers
- o When mushrooms take root
- o When fully-grown mushrooms develop fruits
- 9. Formaldehyde is used as \_\_\_\_\_\_ in mushroom cultivation.

spores.

- Disinfectant
- o Fertilizer
- Insect repellent
- o Food material

10. In mushroom cultivation, Spawn is

- o Compost
- o Button stage
- Vegetative mycelium
- o Harvested mushroom

#### 11. Identify the mushroom.



- o Portobello mushroom
- o Morel mushroom
- o Button mushroom
- o Shitake mushroom

12. Basidiospores are\_\_\_\_

- o Exogenous
- o Endogenous
- o Both a and b
- o None of these
- 13. Post harvest handling unit consist of
  - o Pre cooling chamber
  - o Canning hall
  - o Spawn
  - o Both a and b
- 14. Mushroom is:
  - o Saprophytic fungus
  - o Autotrophic Algae
  - o Heterotrophic fungus
  - o None of the above



- 15. Canning Is employed for
  - Long term storage
  - Short term storage
  - Both
  - None of the above

16. Agaricus bisporus belong to family

- Agaricaceae
- Malvaceae
- o Rubiaceae
- Solanaceae

17. When young fruiting body is completely enveloped by a thin membrane, it is called

- o Mycelium
- o Rhizoids
- o Velum
- o Septate

#### 18. Mushroom has

- o Anticancer property
- o Anti aging property
- o Antibiotic property
- o All of the above

19. With the growth of \_\_\_\_\_\_ velum gets ruptured, while a part of it remained attached to

stipe in the form of ring or\_

- o Basidiocarp and Slender
- o Pileus and Annalus
- o Pyrenoid and Conjugation
- Hyaline and Pyrenoid

#### 20. AHU stands for

- o Air Handling Unit
- o Air Hassel Unit
- o | Aeroplane Handling Unit
- None of the above

21. During Spawning temperature should be maintain between \_

- o 20-30
- o 55-70
- o 80-100
- o 0-10
- 22. Mushrooms are good source of \_\_\_\_\_
  - o Protein
  - o Carbohydrates
  - o Fats
  - o None of these
- 23. The gills of mushrooms \_\_\_\_\_?
  - o Help in respiration
  - o Help in Nutrition
  - o Help in enhancing buoyancy
  - o Bear spores which help in reproduction

3

24. Longer method of compost preparation requires ------days

- o 28 days
- o 15 Days
- o 45 days
- o 8 days

25. Fruiting in mushroom is induced by

- o Lowering temperature
- o Maintaining humidity and moisture
- o Maintaining ventilation and CO2 concentration
- o All of above
- 26. What is spawn?
  - o Vegetative hyphae
  - o Fruiting body
  - o Spores
  - None of the above

27. Which is non edible mushroom?

- o Amanita
- o Agaricus
- o Volvariella
- o<sup>1</sup> Pleurotus

28. The mushroom spawn preparation needs addition of calcium carbonate because it \_\_\_\_\_

- o Maintains the pH
- Absorbs excess water
- Helps in keeping grains separate
- o All of above

29. Which of the following method is used after spawn running?

- o Spawn production
- o Casing
- Compost preparation
- All of above

30. Which of the following are commonly adopted post harvest processing methods of mushrooms?

- o Refrigeration
- o Dehydration
- o Canning
- o All of above

Marks Obtained: Teacher's Sign. ?



### Department of Botany SKILL BASED PROGRAMME (2022-2023) Certificate Course: Mushroom Cultivation

**Theory Examination** 

0

-

#### ATTENDANCE

Date: 21/04/2023

Sr.No	Name of Students	Class	Group	Signature
1	Badwaik Ayush	BSC - II	CBZ	Fadwoik
2	Batke Manoj Abhishek	BSC- II	CBZ	All
3	Bawankar Prakash Vaidehee	BSC - II	CBM	( Bansanta)
4	Bhandare Prakash Kopal	BSC - II	CBG	Ronal
5	Chipate Pravin Tanaya	BSC - II	CBM	Thipate
6	Dutta Soni Raven	BSC - I	CBZ	gaven
7	Ghadge Ramu Siddhant	BSC - I	CBM	S.R. Shadge
8	Giri Devendra	BSC – II	CBZ	Dependen
9	Hadke Rashjrapal Tanmayee	BSC - II	CBZ	Janmaya Hank
10	Khobragade Komal	BSC - III	CBZ	temole
11	Mahule Nitin Yash	BSC - III	CBG	Daluely.
12	Mishra Rajiv Khushi	BSC - III	CBZ	Prat
13	Mohod Sanjay Madhavi	BSC - III	CBG	Momahe
14	Muley Shrikant Avantika	BSC - I	CBG	Reicht
15	Nagare Pradip Tanmay	BSC - I	CBM	Mayan
16	Pandey Bipin Divya	BSC - II	CBZ	Brandey
17	Raut Prabhakar Mansi	BSC - III	CBM	Raut
18	Roria Singh Ranvir Madhavi	BSC - II	CBZ	Ajigh -
19	Shinde Vijay Akansha	BSC - I	CBZ	iscinto:
20	Singh Rakesh Divya	BSC - II	CBM	Bingh

Assistant Professor Department of Botany SSES Amt's Science College Congr. ss Nagar, Nagpur-440012,



Rastrasant Tukadoji Maharaj Nagpur University, Nagpur Session 2022-23

### SKILL BASED COURSE EXAMINATION Certificate Course: Mushroom Cultivation

# Center: S.S.E.S. Amt's Science College, Congress Nagar, Nagpur

Date: 06/05/2023

0

0

Total Marks: 100

Sr. No.	Name of students	Theory marks (50)	Practical marks (30)	Project Marks (10)	Internal Assessment (10)	Total Marks (100)	Grade
1.	Badwaik Surendra Ayush	38	26	10	10	84	А
2.	Batke Manoj Abhishek	36	30	10	10	86	A+
3.	Bawankar Prakash Vaidehee	42	27	10	10	89	A+
4.	Bhandare Prakash Kopal	36	25	10	10	81	A
5.	Chipate Pravin Tanaya	32	28	10	10	80	А
6.	Dutta Soni Raven	46	30	10	10	96	A+
7.	Ghadge Ramu Siddhant	32	30	10	10	82	А
8.	Giri S. Devendra	24	25	10	10	69	B+
9.	Hadke Rashjrapal Tanmayee	30	27	10	10	77	A
10.	Khobragade Liladhar Komal	36	29	10	10	85	A
11.	Mahule Nitin Yash	36	30	10	10	86	A+
12.	Mishra Rajiv Khushi	38	28	10	10	86	A+
13.	Mohod Sanjay Madhavi	38	30	10	10	88	A+

#### STATEMENT OF MARKS



14.	Muley Shrikant Avantika	21	24	10	10	65	B+
15.	Nagare Pradip Tanmay	36	26	10	10	82	A
16.	Pandey Bipin Divya	34	28	10	10	82	A
17	Raut Prabhakar Mansi	46	27	10	10	93	A+
18.	Roria Madhavi RanvirSingh	30	30	10	10	80	A
19.	Shinde Vijay Akanksha	20	27	10	10	67	B+
20.	Singh Rakesh Divya	48	30	10	10	98	A+

Prof.A.D.Bobdey Convener

0

6

Mahakhada

Dr.R.H.Mahakhode Dr.Gousat Good dinator de Assistant Processor Department of Botany SSES Amtis Science College Congress Hager, Hagper-440072



# Shri Shivaji Education Society Amaravati's SCIENCE COLLEGE, Congress Nagar, Nagpur Department of Botany Organized Skill- Based Mushroom Cultivation Certificate Course Session 2022-23

#### REPORT

Mushroom is a fungus which belongs to Basidiomycetes family. It is the only edible fungus. Mushroom cultivation is a technology of growing mushrooms using plant, animal and industrial waste. In a nutshell mushroom cultivation is a **"Wealth out of waste technology"**. Mushroom cultivation is a technique which lead to the entrepreneurship and it is advantageous for students under the heads "Earn while learn".

Department of Botany conducted Two days workshop on '**Mushroom Cultivation**', skill based program under Life Long Learning and Extension, RTMNU, Nagpur for the session 2022-23 on 23 and 24<sup>th</sup> of March 2023in Botany laboratory, Shri Shivaji Science College, Nagpur.

Chief Guest of the program was Mr. Abhimanyu Rao Dongarwar, founder and developer of Sky Mushrooms and training and spawn laboratory. Prof. M.P.Dhore, Principal congratulated the students and advised that the course has much more potential in terms of gaining the employment. Prof. R.N. Deshmukh, HOD highlighted the value of mushrooms. Dr. R.H.Mahakhode, Co-ordinator, Mushroom Cultivation Certificate Course (skill based program) learned about the importance, medicinal and nutritional values of the edible mushroom for humankinds and also developed the employment skill among the students.

Mr. Abhimanyu Rao Dongarwar guided the students to understand the Mushroom Cultivation technique. The program was attended by students through registration under this course. The workshop was conducted for two days, in which students learned about exploring mushrooms, cultivation of Oyster mushrooms and its types. Students gained knowledge about benefits of edible mushrooms including how to fill bags and spawn preparation & information about varieties of mushrooms like button mushrooms, paddy straw mushroom, oyster mushrooms, milky mushrooms etc.

The duration of the course is 45 hrs. The programme held in the following manner-First Guest lecture was held on 18<sup>th</sup> November 2022, in which students learned about "Introduction and Identification of Edible Mushrooms".

Second lecture was conducted on 15<sup>th</sup> March 2023, in which "Sterilization Technique and Preparation of Substrate/ Compost and Nutrition Value of Mushrooms" learnt by students.



In the third lecture students acquired knowledge about "Inoculation, Harvesting, Storage and Marketing of Edible Mushrooms" which was conducted on 16<sup>th</sup> March 2023.

Prof. R. N. Deshmukh, Prof. P.S. Tiwari, Dr. Mrs. R. P. Sonwalker, M. P. Bulkunde attended the programme.

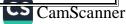
#### Importance of Oyster Mushrooms-

Mushrooms found to have high protein contents (i.e., 50-51%) along with the proteins have 18 different types of amino acids. It has a high minerals content, Vitamin C, D and Vitamin B1, B3, B5 and Cyanocobalamin. Mushrooms can be easily grow and it has good economic values. The yield of mushrooms is noteworthy when properly managed to care. Mushroom also show anti- cancerous, anti-diabetics along with that antiaging, zero fat level, and antiviral, also used in antibiotics preparation. Mushrooms utilize to normalize and stabilized blood pressure for heart patients, increases metabolism and contains insulin, improves digestion etc.

#### Students were completed projects on topics,

Project 1: Mushroom Cultivation: Sterilization & Inoculation TechniqueProject 2: Mushroom Cultivation: Harvesting & ProcessingThe certificate course was completed by taking examination of the students. Question papers are of 50 Marks and it contains 25 objective type questions and each carries 2 marks.





# <u>Workshop on Mushroom Cultivation – Day 1</u>









# <u>Workshop on Mushroom Cultivation – Day 2</u>









# Fruiting Body of Oyster Mushroom – Day 15



FMahakhode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany



### ACTION TAKEN REPORT

Certificate course in Mushroom Cultivation (Skill Based Course) under the Department of Life Long Learning and Extension, RTMU, Nagpur was conducted by the Department of Botany, Shri Shivaji Science College, Nagpur in the session 2022-23. Total Twenty students were registered for this certificate course.

The Department of Botany organised two-day workshop on 'Mushroom Cultivation' on March 23-24, 2023. The workshop, part of the Life Long Learning and Extension program, featured Mr. Abhimanyu Rao Dongarwar of Sky Mushrooms. Students learned about various mushroom cultivation techniques, including sterilization, inoculation, and harvesting. The program included guest lectures and hands-on projects, focusing on the economic and health benefits of mushrooms. The course concluded with an examination, and students gained valuable skills in mushroom cultivation.

Mahakhode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany



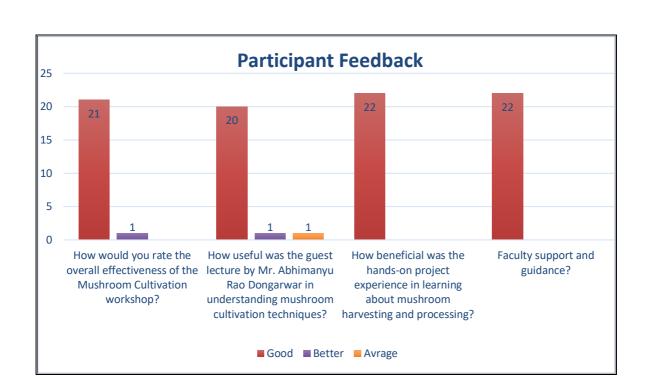
# FEEDBACK FORM

Sr.	Question		Response	
No.		Good	Better	Average
1)	How would you rate the overall effectiveness of the Mushroom Cultivation workshop?			
2)	How useful was the guest lecture by Mr. Abhimanyu Rao Dongarwar in understanding mushroom cultivation techniques?			
3)	How beneficial was the hands-on project experience in learning about mushroom harvesting and processing?			
4)	Faculty support and guidance?			

FMahakhade

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany





Mahathode

Dr. R.H. Mahakhode Course Coordinator Dept. of Botany

Signature of IQAC Coordinator Internal Quality Assurance Cell (IOAC)

SSGrEaphrowcooperscollage CANSTRES (Napara Nagpune 2)



Nohore

Signature of Principal Principal S. S. E. S. Amravati's Science College, Nagpur.









# Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

[Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1" of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016(Mah. Act No. VI of 2017)]

University Skill Development Centre (under Board of Lifelong Learning and Extension)



No. JSA. MC-19.

Shri/Smt./Ku. Akanksha Vijay Shinde is awarded with Certificate on successful completion of the course titled Certificate Course in Mushroom Cultivation in session 2022-2023 under Jeevan Shikshan Abhiyan conducted for 45 hours from 05/09/2022 to 21/03/2023 by the Board of Lifelong Learning & Extension in collaboration with Department of Botany, S.S.E.S. Amt's Science College Congress Nagar, Nagpur, 440412.

He/She has passed the Examination with **B**+ Grade Total Credits Earned : 01

Nocore

Principal SSES Amt's Science College Congress Nagar, Nagpur-12 Course Co-ordinator SSES Amt's Science College Congress Nagar, Nagpur-12

Director Board of Lifelong Learning and Extension, RTMNU, Nagpur

