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

Department of Microbiology
Skill-Based Certificate Course: Biofertilizers & Biopesticides
Session 2019-2020

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

DEPARTMENT OF LIFELONG LEARNING AND EXTENSION

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

No.DOLLE/23719
Dated : 16.10.2019

To,
The Principal
Shivaji Science College,
Nagpur.

Subject : **Sanction for Conducting Short Term Courses under Jeevan Shikshan Abhiyan on No Grant Basis.**

Sir/Madam,

With reference to your proposal for conducting Short Term courses indicated below under Jeevan Shikshan Abhiyan of this Department, I am to inform you that your proposal has been accepted by the Department 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	Duration	No. of Candidates to be admitted	Fees to be Charged per Student	Fees to be Deposited With the Deptt.
1	Diploma Course in Groundwater Exploration	8 Weeks	20	1200/-	10%
2	Diploma Course in Statistical Quality Control	10 Weeks	16	850/-	10%
3	Diploma Course in Immune-Diagnostics	8 Weeks	20	2200/	10%
4	Diploma Course in Environmental and Water Management	6 Weeks	10	1000/	10%
5	Diploma Course in Mushroom Cultivation	8 Weeks		1000/	10%
6	Diploma Course in Biofertilisers and Biopesticides	14 Weeks	20	1500/	10%
7	Diploma Course in Forestry and Wild Life Management	6 Weeks	20	1500/	10%

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

1. **This sanction is valid for this particular Batch only.**
2. Fees for the course should be charged as per the norms prescribed.
3. Expenditure on the course should be incurred as per norms.
4. Course should be started within a Month from **the date of sanction.**
   Please communicate your acceptance within **a month and submit Initial Report Along with list of students admitted.**

Dr. A.D. Bobdey
for n.a.
Mohare
03.11.2020

Your's faithfully,
Director

SEAL

for Dr. Pravita Gulhane
Department of Microbiology
Science College, Congress Nagar,
NAGPUR.

Activity Report: Skill Based Certificate Course- Biofertilizers and Biopesticides
(Session 2018-19)

The skill based certificate course syllabus for B.Sc. I, II and III appear students. Fifteen weeks certificate course in BIOFERTILIZERS AND BIOPESTICIDES. A total of 10 students were enrolled to the course. The examination of the course shall comprise of one theory paper of three hours carries 50 marks and a practical of one hour duration carries 50 marks. Internal assessment for the course based on one theory paper of 10 marks shall be conducted by university approved teachers. Internal assessment marks should be included in minimum passing marks of the students. Candidates are expected to pass separately in theory, internal assessment and practical examination.

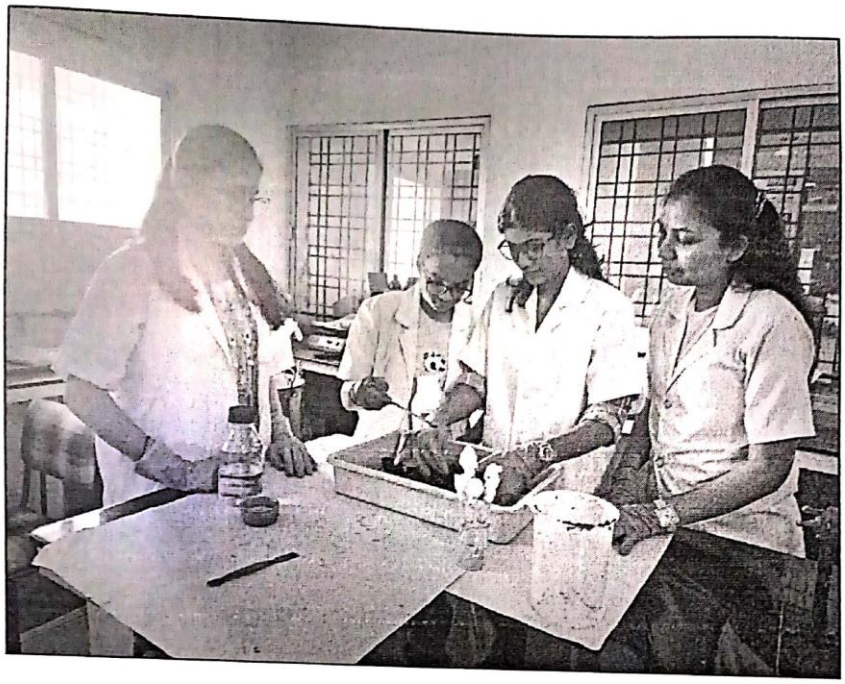
Students require 40% marks in theory for passing including internal marks. Separate passing in practical examination is required, assignment submission is necessary to get internal marks. The structure of syllabus for certificate course along with distribution of marks is also displayed in the following table.

Course	Theory papers and Practicals	Marks			Total Marks
		Theory	Internal Assessment	Practical	
Certificate course in Biofertilizers and Biopesticides	1. Theory paper- Biofertilizers and Biopesticides	50	10		100
	2. Practicals based on course			40	
		Grand Total			100

*Internal assessment –Based on student's attendance and performance during unit test exam and assignment/field work.

Based on assignment & activity conducted for Biofertilizer and Biopesicide production the Internal assessment marks were given. For theory and practical marks, the objective mode of examination (M.C.Q.) was conducted.

Dr. Pravita Gulhane
Department of Microbiology
Science College, Congress Nagar,
NAGPUR.



Biofertilizer Production Process

Session 2019-2020

SEAL

Science College, Congress Nagar, Nagpur

Dr. Pranita Gulhane

Department of Microbiology

Science College, Congress Nagar,

NAGPUR.

List of the Students: Skill Based Certificate Course- Biofertilizers and Biopesticides (Session 2019-2020)

Sr. No.	Name of Student	Signature
1)	Aditi Warghade	
2)	Abhishek Tote	
3)	Akask Khadge	
4)	Sai Shrirame	
5)	Pooja Kewlani	
6)	Purva Katakwar	
7)	Payal Thakur	
8)	Renuka Kathale	
9)	Urvashi Vaishnav	
10)	Vaishnavi Bagade	

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Dr. Pravija Gulhane
Department of Microbiology
Science College, Congress Nagar,
NAGPUR.

S.S.E.S.A'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

U.G. Department of Microbiology Time Table Session-2019-2020

Skill Based Course: Biofertilizers & Biopesticides

w.e.f. 25/01/2020

Days	Class B.Sc.	1	2	3	4	5	6	7	8	9	10	Skill Based Course
		07:30-08:18	08:18-09:06	09:06-09:54	10:00-10:48	10.48-11:36	11:36-12:24	12:44-01:32	01:32-02:20	02:20-03:08	3.12-5.36	5.36-6.20
Monday & Tuesday	Sem II	--------- MB(B1)------ SAW					MB-C10 (B1,B2) (B5,B6) SAD				Biofertilizer & Biopesticides Practical PG	
	Sem IV				---------- MB(B1,B2) SPD+SVS+VC				MB-C1 (B1,B2)VC	MB-C5 (B5, B6)MJM		
	Sem VI	--------- MB(B1)------ SVS+VC			MB-C1 (B5, B6) CJC		MB-C9 (B1, B2) SAW	---------MB (B6)--------- MK+SG				
Wednesday & Thursday	Sem II					MB-C10 (B1,B2,B5,B6) Wed-SPD MB-C6 (B1,B2,B5,B6) Thru-VC		--------- MB(B5)--------- SVK				
	Sem IV	--------- MB(B6)--------- SAW						MB-C7 (B1, B2) Wed-KB+Thru-MJM MB-C5 (B5, B6) Wed-SAW+Thru-VC				
	Sem				----MB B2 SAW+SAD			MB-C7(B1, B2) (B5,B6)VC				
Friday & Saturday	Sem II			MB-C1 (B1,B2) Fri-SAD Sat--SAW	MB-C7 (B5, B6) KB			--------- MB(B2,B6)--------- SPS+PG+PF				Biofertilizer& Biopesticides (Thur, Fri, Sat) PG
	Sem IV							MB-C7 (B1, B2) SG	MB-C5 (B5, B6) MK		PRCT MB B5 MJM	
	Sem VI	--------- MBB5--------- SD						MB-C1 (B1, B2) Fri-SAD+Sat-MK MB-B2(B5,B6) Fri+Sat-SPS				

Teaching Faculty: MJM-Mrs.M.J.Madhugiri, PG-Pranita Gulhane SAW -Savita Wankhede, SPD- Dr.Shilpa Deshmukh, SAS- Srikala Soni ND-Nupur Deshmukh, SGK-Shital Khedkar, Contributory Teachers-VC-Vaidehi Chandorkar MK-Dr.Manpreet Kaur DB-Dhanashree Badwaik, SD-Sadiya

SEAL

Dr. Pranita Gulhane

Rashtrasant Tukadoji Maharaj Nagpur University

Exam Name: Skill based Certificate Course Examination, Summer- 2020

Duration: 1hr

Name of Subject: Biofertilizer and Biopesticides

Max Marks:50

Medium: English

Marks Obtained

Centre Name: Shri Shivaji Science College Congress Nagar, Nagpur

Date: 13/03/2020

Name of Student:

Year: B.Sc Group :

Note:
(1) Each question carries 2 marks
(2) No negative marking

Q.1) Which of the following is not a free living nitrogen fixing bacteria?

a) Azotobacter

b) Clostridium

c) Klebsiella

d) Xanthomonas

Q.2) Presence of which of the following elements is required for nitrogen fixation?

a) Phosphorus

b) Carbon

c) Silver

d) Oxygen

Q.3) Which of the following is not used as a biofertilizer?

a) Bacteria

b) Algae

c) Cyanobacteria

d) Fungi

Q,4) Which of the following is an aerobic nitrogen-fixing bacterium?

a) Azotobacter
b) Clostridium
c) Rhodospirillum
d) Rhodopseudomonas

Q.5) Which of the following bacteria can't fix atmospheric nitrogen?
a) Nostoc
b) Anabaena
c) Oscillatoria
d) Lactobacillus

Q.6) Which of the following serve as biofertilizer in paddy fields?
a) Bacteria
b) Yeast
c) Cyanobacteria
d) Fungi

Q.7) Among the following pairs of microbes, which pair has both microbes that can be used as biofertilizers?
a) Aspergillus and Rhizopus
b) Rhizobium and Rhizopus
c) Cyanobacteria and Rhizobium
d) Aspergillus and Cyanobacteria

Q.8) Symbiotic Nitrogen fixation is carried out by
a) Azotobacter
b) Rhizobium
c) Pseudomonas
d) none

Q.9) Aquatic fern which is an excellent biofertilizer
a) Salvinia
b) Marsilea
c) Pteridium
d) Azolla

Q.10) Which element plays an important role in nitrogen fixation?
a) Mn
b) Mo
c) Zn
d) Cu

11. For vermicomposting, this species of earthworm is not apt

(a) Perionyx excavates

(b) Pheretima posthuma

(c) Eudrilus eugeniae

(d) Eisenia fetidae

12. The process in which earthworms are used to degrade organic wastes is

(a) Compost bedding

(b) Humus forming

(c) Vermicomposting

d) None Answer:

13. Kitchen wastes and animal excreta can be minimized most profitably via

(a) vermiculture

(b) biogas production

(c) direct usage as biofertilizers

(d) storing in underground storage tanks Answer:

14. The process of covering spawned compost with a suitable material is known as

(a) cropping

(b) casing

(c) spawning

(d) composting Answer:

15. While burrowing, the anterior ends of earthworms become turgid serving as a hydraulic skeleton though they do not possess a skeleton. This is as a result of

(a) setae

(b) gut peristalsis

(c) coelomic fluid

(d) none of the above Answer:

16. This is apt for vermicomposting

(a) Algae

(b) Nitrifying bacteria

(c) Earthworms

(d) Fungus Answer

17. Vermicompost is a/an

(a) toxic material

(b) organic biofertilizer

(c) inorganic fertilizer

(d) synthetic fertilizer Answer

18. This can be the best worm for composting

(a) pink worms

(b) red wigglers

(c) maggots

(d) does not matter

19. In earthworms, trypanosome is a

(a) excretory structure

(b) a circulatory system structure

(c) fold of intestine

(d) defense mechanism

Answer: (c)

20. Which of the following nutrients is abundantly found in worm castings?

(a) Phosphorus

(b) Nitrogen

(c) Calcium and other minerals

(d) All of these Answer

21. Which of the following is incorrectly matched?

(a) Alnus – *Frankia*

(b) Alfalfa – *Rhizobium*

(c) Nitrogen fixer – *Anabaena*

(d) Mycorrhiza – *Rhodospirrilum*

22 Which of the following nitrogen fixers is found in rice fields associated with *Azolla***?**

(a) *Tolypothrix*

(b) *Frankia*

(c) *Anabaena*

(d) *Spirulina*

23 Which of the following is not a biofertilizer?

(a) Mycorrhiza

(b) *Rhizobium*

(c) *Agrobacterium*

(d) *Nostoc*

24 Which of the following is used as a biofertilizer for soybean crop?

(a) *Nostoc*

(b) *Azospirillum*

(c) *Rhizobium*

(d) *Azotobacter*

25. Which of the following is commonly used as a nitrogen fixer in paddy fields?

(a) *Frankia*

(b) *Oscillatoria*

(c) *Azospirrilum*

(d) *Rhizobium*

Signature of Valuer:

Name of Valuer: Dr.Pranita B. Gulhane

Answer key

1. : d

2..b

3. b

4. a

5. d

6. c

7. c

8. b

9. b

10. b

11.a

12.b

13.a

14.b

15.a

16.c

17.c

18.b

19.c

20.d

21.c

22.d

23.d

24.c

25.c

Mark List: Skill Based Certificate Course- Biofertilizers and Biopesticides (Session 2019-2020)

Sr. No.	Name of the Student	Marks obtained out of 50 (Theory)	Marks obtained out of 40 (Practical)	Marks obtained out of 10 (Internal)	Total Marks 100
1)	Aditi Warghade	42	36	10	88
2)	Abhishek Tote	46	36	10	92
3)	AkaskKhadge	36	37	10	83
4)	Sai Shrirame	48	36	10	94
5)	Pooja Kewlani	50	38	10	98
6)	Purva Katakwar	46	39	10	95
7)	Payal Thakur	44	35	10	89
8)	Renuka Kathale	42	34	10	86
9)	Urvashi Vaishnav	48	35	10	93
10)	Vaishnavi Bagade	44	36	10	90

SEAL

Dr. Pravita Gullane
Department of Microbiology
Science College, Congress Nagar,
NAGPUR.

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

[Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1st 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)

Certificate

No. .....

Shri/Smt./Ku. Aditi Warghade *is awarded with Certificate on successful completion of the course titled* Biofertilizers and Biopesticides *in session* 2019-20 *under* ***Jeevan Shikshan Abhiyan*** *conducted for* ***45 hours*** *from* 16/10/2019 *to* 21/12/2019 *by the* ***Board of Lifelong Learning & Extension*** *in collaboration with Department of Botany,* ***S.S.E.S. Amt's Science College Congress Nagar, Nagpur, 440012.***

He/She has passed the Examination with A *Grade*

Total Credits Earned : 01

Principal	Course Co-ordinator	Director
SSES Amt's Science College	SSES Amt's Science College	Board of Lifelong Learning
Congress Nagar, Nagpur-12	Congress Nagar, Nagpur-12	and Extension, RTMNU, Nagpur