



Shri Shivaji Education Society, Amravati's

SCIENCE COLLEGE



Congress Nagar, Nagpur-12 (M.S.), India

Accredited with CGPA of 3.51 at 8A+9 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 8PARAMARSH Scheme9, UGC, New Delhi

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF PHYSICS

Session 2023-2024

**Course Title: Certificate Course on Physics behind Green
Synthesis of Nanoparticles from Medicinal Leaves**

Duration – 30 Hours (10 Weeks)

Course Start from 1 Aug 2023 to 7 Oct 2023

Course Coordinator: Dr. S. V. Khangar

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**Shri Shivaji Education Society Amaravati's
Science College Congress Nagar, Nagpur
Department of Physics**

Course Report on Add-on Course

“Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves”

Undergraduate Course for Physics Students


Duration: 01/08/2023 to 07/10/2023

Total Students: 78

This 10-week add-on course provided B.Sc. Physics students with a comprehensive understanding of the Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves. The course was conducted by Dr. S. V. Khangar, Assistant Professor, Department of Physics, SSES Amt's Science College Congress Nagar Nagpur. Total 78 Students of B.Sc. I, II and III, year Physics were enrolled for the course.

This course provided UG students with a comprehensive understanding of the fundamental physics principles underlying the green synthesis of nanoparticles from medicinal leaves. It also emphasized hands-on experience and real-world applications. This course equipped students with a deep understanding of the physics behind the green synthesis of nanoparticles from medicinal leaves, empowering them to contribute to cutting-edge research and development in nanotechnology with a focus on sustainability and environmental responsibility. The students were evaluated through MCQ based final exam of 60 marks and practical lab sessions and hands on sessions of 40 marks. All 78 students successfully completed the course, with a majority achieving high grades. Several students demonstrated exceptional skills in practical applications and their innovative ideas during hands on experience. Students worked on individual and group projects that involved synthesis and characterization techniques.

The 10-week Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves was a valuable addition to the undergraduate physics curriculum, equipping students with essential knowledge and skills in synthesis and characterization techniques. The course successfully combined theoretical knowledge with hands-on experiences, the students delve into the quantum mechanics, optics, and thermodynamics involved in the synthesis, characterization, and applications of nanoparticles using green method.


Course Coordinator

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

Subject: For permission to conduct the add on courses in Physics during the session 2023-2024

Respected Sir,

This is to request you that, the teachers of Physics department have prepared the syllabus and modules of the 30 hours certificate courses for the session 2023-2024.

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



Dr. S. W. Anwane
Professor and Head
Department of Physics
Shri Shivaji Education Society Amravati's
SCIENCE COLLEGE
Congress Nagar, Nagpur

Permitted
MDhore

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Physics

Add-on Certificate Course (2023-2024)

**Certificate Course: Certificate Course on Physics behind Green Synthesis
of Nanoparticles from Medicinal Leaves**

NOTICE (For UG)

Date: 15/07/2023

All the B. Sc. First year, Second Year and Final Year students of the department of Physics are hereby informed that the Physics department commencing a certificate course on "Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves" from 01/08/2023-07/10/2023. The course registration will start from 20/07/2023 to 31/07/2023. Interested students contact to course coordinator for registration.

Note: It is free registration

**Course coordinator: Dr. Sugandha V. Khangar
Contact Number: 9975768840**


Course Coordinator

Dr. Sugandha V. Khangar

Shri Shivaji Education Society Amravati's
Science College
Congress Nagar, Nagpur

Department of Physics

Add-on Certificate Course (2023-2024)

Certificate Course: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

**NOTICE
(For UG)**

Date: 27/07/2023

All the registered students of the department of Physics are hereby informed that the Physics department commencing a certificate course on "Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves" from 01/08/2023-07/10/2023. The registered students are requested to do the regular classes and practical as per the scheduled timetable.
For any query contact to course coordinator.

**Course coordinator: Dr. Sugandha V. Khangar
Contact Number: 9975768840**

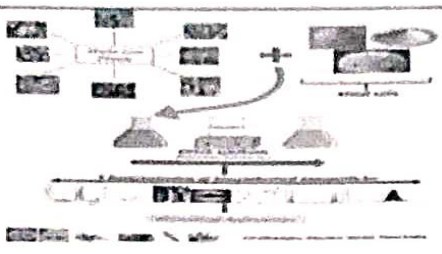

Time Table

Day	Theory	Room No.
Friday	SVK (C4) Theory 4.00 PM – 5.00 PM	C8
Saturday	SKS (C4) Theory, 4.00 PM – 5.00 PM	C8
	SVK (Phy Lab) practical, 5.00 PM – 6.00 PM	Physics Research Lab


Course coordinator

Dr. Sugandha V. Khangar

Session 2023-2024

<u>Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves</u>	
	<p>Free Certificate Course for College Students</p> <p>Duration: 30 Hours (10 Weeks) Course Duration: 01/08/2023-07/10/2023</p> <p>Frequency: Weekly sessions (2-3 hours each)</p> <p>Process of Registration: Early birds will be admitted first. Registration Date: 20/07/2023 to 31/07/2023 Exam: 18/10/2023</p>
<p>Course Objectives:</p> <ol style="list-style-type: none">1) Understanding the Quantum Mechanical Basis2) Exploration of Optoelectronic Properties3) Mastery of Spectroscopic Analysis Techniques4) Expertise in Microscopic Imaging5) Investigation of Nanoparticle Dynamics6) Evaluation of Physical Properties	<p>Course Overview:</p> <p>This course will equip participants with a deep understanding of the physics behind the green synthesis of nanoparticles from medicinal leaves, empowering them to contribute to cutting-edge research and development in nanotechnology with a focus on sustainability and environmental responsibility. It also provides participants with a comprehensive understanding of the fundamental physics principles underlying the green synthesis of nanoparticles from medicinal leaves. Participants will delve into the quantum mechanics, optics, and thermodynamics involved in the synthesis, characterization, and applications of nanoparticles using green methods</p>
 <p>Department of Physics Shri Shivaji Education society Amravati's, Science college Congress Nagar, Nagpur – 440012</p>	
<p>Last Date of Registration: 6/10/2023</p> <p>Course Coordinator: Dr. Sugandha V. Khangar</p>	<p>Contact: 9975768840</p>



Dr. S. V. Khangar
Assistant Professor
Department of Physics
Shri Shivaji Education Society Amravati's
Science College
Congress Nagar, Nagpur-440012.

SSES Amravati's Science College, Congress Nagar, Nagpur-440012

DEPARTMENT OF PHYSICS

COURSE MODULE AND SYLLABUS

Course Title: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

Course Coordinator: Dr. Sugandha V. Khangar

Course modules:

1. Introduction to Nanoparticles and Green Synthesis

- Overview of nanoparticles and their significance
- Principles of green synthesis and its importance in sustainability
- Role of physics in guiding green synthesis techniques

2. Quantum Mechanics and Nanoparticle Synthesis

- Basics of quantum mechanics relevant to nanoparticle synthesis
- Quantum confinement effects and size-dependent properties
- Electron transfer processes in green synthesis methods

3. Optical Properties of Nanoparticles

- Plasmon resonance and its role in nanoparticle optical properties
- Quantum dots and their applications in optoelectronics
- Spectroscopic techniques for analyzing nanoparticle optical properties

4. Microscopic Imaging of Nanoparticles

- Principles of transmission electron microscopy (TEM) and scanning electron microscopy (SEM)
- Atomic force microscopy (AFM) for nanoscale imaging and characterization
- Understanding nanoparticle morphology and structure using microscopy

5. Thermodynamics and Nanoparticle Stability

- Thermodynamic aspects of nanoparticle formation and stability

- Gibbs free energy and surface energy considerations
- Strategies for controlling nanoparticle size and stability in green synthesis.

6. Nanoparticle-Biomolecule Interactions

- Physics of nanoparticle interactions with biomolecules
- Drug delivery mechanisms and cellular uptake dynamics
- Applications of nanoparticles in biophysics and medical physics

7. Advanced Characterization Techniques

- Fourier-transform infrared spectroscopy (FTIR) for molecular analysis
- Raman spectroscopy for probing molecular vibrations
- Dynamic light scattering (DLS) for nanoparticle size and zeta potential measurements

8. Applications and Future Perspectives

- Current applications of green-synthesized nanoparticles in physics-related fields
- Emerging trends and future directions in green nanotechnology
- Ethical and sustainability considerations in nanoparticle research and development

Course Objectives:

- 1) Understanding the Quantum Mechanical Basis
- 2) Exploration of Optoelectronic Properties
- 3) Mastery of Spectroscopic Analysis Techniques
- 4) Expertise in Microscopic Imaging
- 5) Investigation of Nanoparticle Dynamics
- 6) Evaluation of Physical Properties

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

Evaluation Strategies: Oral discussions and Final MCQ examination.

Course Outcomes (COs):

1. **Application of Quantum Mechanics:** Apply quantum mechanical principles to predict and explain the optical, electronic, and magnetic properties of nanoparticles synthesized from medicinal leaves, enabling the design of nanomaterials with tailored properties.
2. **Proficiency in Spectroscopic and Microscopic Analysis:** Demonstrate expertise in using spectroscopic and microscopic techniques to characterize the structural and optical properties of nanoparticles, interpreting experimental data through a physics lens.
3. **Skills in Nanoparticle Synthesis and Characterization:** Acquire practical skills in synthesizing nanoparticles using green methods and characterizing them using advanced instrumentation, preparing for research and industrial applications in nanotechnology.
4. **Understanding of Nanoparticle-Biomolecule Interactions:** Gain insights into the physics of nanoparticle-biomolecule interactions, elucidating mechanisms of drug delivery, cellular uptake, and biomolecular sensing for biomedical and biophysical applications.
5. **Critical Thinking and Problem-Solving Abilities:** Develop critical thinking skills and problem-solving abilities by applying physics principles to address interdisciplinary challenges in green nanotechnology, fostering innovation and sustainability.

Duration of course: Ten weeks (30 Hours)

Target Audience:

- Physics undergraduates interested in nanotechnology
- Researchers also seeking to deepen their understanding of green synthesis techniques from a physics perspectives.

Prerequisites:

- Basic knowledge of quantum mechanics and optics
- Familiarity with laboratory techniques (preferred and mandatory)

Certification:

Participants who successfully complete the course requirements, MCQ type theory exam and a practical , will receive a certificate of completion highlighting their understanding of the physics behind green synthesis of nanoparticles from medicinal leaves.

The Structure of Syllabus and system of evaluation -

Course	Theory Papers and Practical	Total Marks	
		Theory	Project/ Practical
Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves	Theory paper- Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves * Theory examination will be of MCQ pattern having 60 questions each with equal marks.	60	40
	* Practical examination will be based on performance evaluation in the laboratory	100	

Retanagar
Coordinator

Prakash
B.A. H. S. S.

W. Shore
Principal
S. S. E. S. Amravati's
Science College, Nagpur.

Internal Quality Assurance Cell
(IQAC)

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

SYLLABUS

Certificate course (10 weeks)

(Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves)

Theory-

UNIT- I

Introduction to Nanoparticles and Green Synthesis: Overview of nanoparticles and their significance, Principles of green synthesis and its importance in sustainability, Role of physics in guiding green synthesis techniques.

Quantum Mechanics and Nanoparticle Synthesis: Basics of quantum mechanics relevant to nanoparticle synthesis, Quantum confinement effects and size-dependent properties, Electron transfer processes in green synthesis methods

Unit-II

Optical Properties of Nanoparticles: Plasmon resonance and its role in nanoparticle optical properties, Quantum dots and their applications in optoelectronics, Spectroscopic techniques for analyzing nanoparticle optical properties

Microscopic Imaging of Nanoparticles: Principles of transmission electron microscopy (TEM) and scanning electron microscopy (SEM), Atomic force microscopy (AFM) for nanoscale imaging and characterization, understanding nanoparticle morphology and structure using microscopy.

Unit III

Thermodynamics and Nanoparticle Stability: Thermodynamic aspects of nanoparticle formation and stability, Gibbs free energy and surface energy considerations, Strategies for controlling nanoparticle size and stability in green synthesis.

Nanoparticle-Biomolecule

Interactions: Physics of nanoparticle interactions with biomolecules, Drug delivery mechanisms and cellular uptake dynamics, Applications of nanoparticles in biophysics and medical physics

Unit IV:

Advanced Characterization Techniques: Fourier-transform infrared spectroscopy (FTIR) for molecular analysis, Raman spectroscopy for probing molecular vibrations, Dynamic light scattering (DLS) for nanoparticle size and zeta potential measurements.

Applications and Future Perspectives: Current applications of green-synthesized nanoparticles in physics-related fields, Emerging trends and future directions in green nanotechnology, Ethical and sustainability considerations in nanoparticle research and development.

Wang
Course Coordinator

Practical / Project Work and Assessment

- Hands-on practical work involving the synthesis and characterization of nanoparticles from medicinal leaves.
- Attendance

Distribution of marks: -

- | | |
|------------------------------|------|
| 1. Hands on Practical work - | 30 M |
| 2. Attendance - | 10 M |

Week-wise Teaching Plan

Week	Hrs.	Syllabus
Week 1	3	Overview of nanoparticles and their significance, Principles of green synthesis and its importance in sustainability, Practical
Week 2	3	Role of physics in guiding green synthesis techniques. Basics of quantum mechanics relevant to nanoparticle synthesis, Practical
Week 3	3	Quantum confinement effects and size-dependent properties Electron transfer processes in green synthesis methods practical related to synthesis, Practical
Week 4	3	Plasmon resonance and its role in nanoparticle optical properties, Quantum dots and their applications in optoelectronics, Spectroscopic techniques for analysing nanoparticle optical properties. understanding nanoparticle morphology and structure using microscopy, Practical


Week 5	3	Principles of transmission electron microscopy (TEM) and scanning electron microscopy (SEM), Atomic force microscopy (AFM) for nanoscale imaging and characterization Practical
Week 6	3	Thermodynamic aspects of nanoparticle formation and stability, Gibbs free energy and surface energy considerations, Strategies for controlling nanoparticle size and stability in green synthesis, Practical
Week 7	3	Physics of nanoparticle interactions with biomolecules, Drug delivery mechanisms and cellular uptake dynamics, Applications of nanoparticles in biophysics and medical physics, Practical
Week 8	3	Fourier-transform infrared spectroscopy (FTIR) for molecular analysis, Raman spectroscopy for probing molecular vibrations, Dynamic light scattering (DLS) for nanoparticle size and zeta potential measurements. Practical
Week 9	3	Current applications of green-synthesized nanoparticles in physics-related fields, Emerging trends and future directions in green nanotechnology, Ethical and sustainability considerations in nanoparticle research and development, Practical- Report preparation
Week 10	3	Report Preparation (T) and Submission- Practical

Week 6	3	Thermodynamic aspects of nanoparticle formation and stability, Gibbs free energy and surface energy considerations, Strategies for controlling nanoparticle size and stability in green synthesis, Practical
Week 7	3	Physics of nanoparticle interactions with biomolecules, Drug delivery mechanisms and cellular uptake dynamics, Applications of nanoparticles in biophysics and medical physics, Practical
Week 8	3	Fourier-transform infrared spectroscopy (FTIR) for molecular analysis, Raman spectroscopy for probing molecular vibrations, Dynamic light scattering (DLS) for nanoparticle size and zeta potential measurements. Practical
Week 9	3	Current applications of green-synthesized nanoparticles in physics-related fields, Emerging trends and future directions in green nanotechnology, Ethical and sustainability considerations in nanoparticle research and development, Practical- Report preparation
Week 10	3	Report Preparation (T) and Submission- Practical

SSES AMT'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR-12
(Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves)

Time Table

Day	Theory
Friday	SVK (C4) Theory 4.00 PM – 5.00 PM
Saturday	SKS (C4) Theory, 4.00 PM – 5.00 PM
	SVK (Phy Lab) practical, 5.00 PM – 6.00 PM


 Course Coordinator

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar Nagpur
Department of Physies

Certificate course

Title: "Certificate Course on Physies behind Green Synthesis of Nanoparticles
from Medicinal Leaves"

Registration Sheet-2023-2024

Course Coordinator: Dr. S. V. Khangar

Sr. No.	Name of Students	Sign
1	SANGOLE AKANSHA SUBHASHI	
2	MARBATE SANSKRUTI RAJENDRA	
3	YADAV SAPNA JAIKRISHNA	
4	CHAUDHARY MUNESH RAVINDRASINGH	
5	SHENDE CHAITRALI GANESHRAO	
6	BAGDE SAKSHI SATISH	
7	BAGDE SHRADDHA BABAN	
8	SINGH NEHA DARA	
9	PARSHURAMKAR GAURAV MANOHAR	
10	DHABEKAR SWATI FATTU	
11	CHODHARY DHANSHREE NARENDRA	
12	PAUNIKAR YASHWANT RAJU	
13	AGARKAR PRANJAL VIJAY	
14	LAKHE PRANAV BHUPESH	
15	MOTWANI VARUN DOLAT	
16	JANGADE SANJANA SADANAND	
17	NAYAB NIDHI ARVIND	
18	KENE JANVI SUBHASHI	
19	KHAPRE MUSKAN PRAKASHI	
20	SHARMA SNEHA RANJAYKUMAR	
21	GANVIR ISHITA HEMANT	
22	KARKI SRUSHTI SUBHASHI	

23	MEENA RUCHI MAHENDRA	
24	BEDEKAR TUSHAR VAIBHAV	
25	DHAKATE SAKSHI PRAMOD	
26	PANTAWANE SHREYA SANJAY	
27	BHAGAT SANJIVANI SAGAR	
28	LAKDE SHREYASH MAHADEO	
29	RAUT DISHA VIJAY	
30	LODHIKAR ANJALI NANESHWAR	
31	BALAPURE PARI GAJANAN	
32	BHIWGADE SHRINAY YOGESH	
33	PATLE DEVESH DHURVAJI	
34	KAWALE GAYATRI VINOD	
35	PAROCHE PALAK SATISH	
36	JOSHI SANCHIT MADHUSUDAN	
37	SHINDE NILESH SUNIL	
38	KAYARKAR JANHVI DHIRENDRA	
39	JOSHI ARTI SUBHASH	
40	PATEL LOKESH SHRINIWAS	
41	MASRAM NIKITA SITARAM	
42	MESHRAM NISHANT DUSHYANT	
43	NANNAWARE SAKSHI MURLIDHAR	
44	MISHRA MAHEK PRAMOD	
45	PATRICK SUMIT PASKAL	
46	ZADE GAURI MUKESH	
47	CHANDANKHEDE RACHANA VINESH	
48	KANOJE KHUSHI SANJAY	
49	JADHAV AASTHA SANJU	
50	BHAGAT KRUNAL GAJANAN	
51	PITALE SHRIVATSA PRASHANT	
52	JAYSWAL ABHISHEK SANJAY PRASAD	
53	MANKAR MRUNMAYI RUPESH	
54	NINAWA PRANOTI RAJKUMAR	

55	PATHAK MUSKAN VINAY	
56	MESHARAM AYUSH BHARAT	
57	MOUNDEKAR VINKU MANIK	
58	WASE RUSHIKESH SHUBHAKAR	
59	SIRSAT VIKRANT DEVENDRA	
60	BALODIYA RITIKA VISHNU	
61	BILKAR AMISHA SITARAM	
62	JAUNJAL GARGI DILIP	
63	MANDAL SURAJ SHANKAR	
64	RAMAPURE ANUSHKA GANESH	
65	SHENDE OM RAJESH	
66	WAGH SARANG VILAS	
67	MESHARAM NIKHITA RAVIKANT	
68	JADHAV VARUN PANDIT	
69	MALIK DIPTI RAJVIRSINGH	
70	BHALAVI SIDDHESH RAMESHWAR	
71	PATLE GAURI SHRIKANT	
72	AMBEKAR ATHARV RAMBHAU	
73	PIMPLE MANYA GANESH	
74	DHOLE ISHA ANIL	
75	GEDAM ROHIT DIPAK	
76	DAF PRADNYA CHANDRAKANT	
77	DHADSE VAISHNAVI VIJAY	
78	MISAR KHUSHI MANOJ	
79	BANSOD NIKHIL MILIND	
80	TIDKE PRIYOG RAMKRUSHNA	


Course Coordinator
Dr. S. V. Khangar

Attendance Sheet

Certificate Course

Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

Course Duration: 01/08/2023-07/10/2023

Sr.N o.	Students Full Name	Week-1	Week-2	Week-3	Week-4	Week-5	Week-7	Week-8	Week-9	Week-10
		T	T	T	T	T	T	T	T	T
1	Ku SANGOLE AKANSHA SUBHASH	4	5	11	12	13	14	15	16	17
2	Ku MARBATE SANSKRUTI RAJENDRA	4	5	11	12	13	14	15	16	17
3	Ku YADAV SAPNA JAIRISHNA	4	5	11	12	13	14	15	16	17
4	Ku CHAUDHARY MUNESH RAVINDRASINGH	4	5	11	12	13	14	15	16	17
5	Ku SHENDE CHAITRALI GANESHRAO	4	5	11	12	13	14	15	16	17
6	Ku BAGDE SAKSHI SATISH	4	5	11	12	13	14	15	16	17
7	Ku BAGDE SHRADDHA BABAN	4	5	11	12	13	14	15	16	17
8	Ku SINGH NEHA DAR	4	5	11	12	13	14	15	16	17
9	Ku PARSHURAMKAR GAURAV MANOHAR	4	5	11	12	13	14	15	16	17
10	Ku DHABEKAR SWATI FATTU	4	5	11	12	13	14	15	16	17
11	Ku CHAUDHARY DHANSHREE NARENDRA	4	5	11	12	13	14	15	16	17
12	Ku PAUNIKAR YASHWANT RAJU	4	5	11	12	13	14	15	16	17
13	Ku AGARKAR PRANAL VIJAY	4	5	11	12	13	14	15	16	17
14	Ku LAKHE PRANAV BHUPESH	4	5	11	12	13	14	15	16	17
15	Ku MOTWANI VARUN DOLAT	4	5	11	12	13	14	15	16	17
16	Ku JANGADE SANJANA SADANAND	4	5	11	12	13	14	15	16	17
17	Ku NAYAB NIDHI ARVIND	4	5	11	12	13	14	15	16	17
18	Ku KENE JANVI SUBHASH	4	5	11	12	13	14	15	16	17
19	Ku KHAPRE MUSKAN PRAKASH	4	5	11	12	13	14	15	16	17
20	Ku SHARMA SNEHA RANJAYKUMAR	4	5	11	12	13	14	15	16	17
21	Ku GANVIR ISHITA HEMANT	4	5	11	12	13	14	15	16	17
22	Ku KARKI SRUSHTI SUBHASH	4	5	11	12	13	14	15	16	17
23	Ku MEENA RUCHI MAHENDRA	4	5	11	12	13	14	15	16	17
24	Ku BEDEKAR TUSHAR VAIBHAV	4	5	11	12	13	14	15	16	17
25	Ku DHAKATE SAKSHI PRAMOD	4	5	11	12	13	14	15	16	17
26	Ku PANTAWANE SHREYA SANJAY	4	5	11	12	13	14	15	16	17
27	Ku BHAGAT SANJIVANI SAGAR	4	5	11	12	13	14	15	16	17

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Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Physics

Add-on Certificate Course (2023-2024)

Certificate Course: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

NOTICE
(For UG)

Date: 6/10/2023

All the registered students for certificate course on "Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves" are hereby informed that their Final exam is held on 18/10/2023 at 11: 00 am sharp.

Note:

Question paper will be of 60 Marks

Time for examination is 1 hour

Each question carry 2 Marks

For any query contact to course coordinator.

Room No - C3

Course coordinator: Dr. Sugandha V. Khangar

Contact Number: 9975768840


Course coordinator

Dr. Sugandha V. Khangar

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar Nagpur
Department of Physics

Certificate course

Title: "Certificate Course on Physics behind Green Synthesis of Nanoparticles from
Medicinal Leaves"

Theory Examination Attendance Sheet-2023-2024

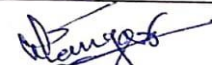
Course Coordinator: Dr. S. V. Khangar

Date: 18/10/2023

Sr. No.	Name of Students	Sign
1	SANGOLE AKANSHA SUBHASH	ASangole
2	MARBATE SANSKRUTI RAJENDRA	SMarbate
3	YADAV SAPNA JAIKRISHNA	SYadav
4	CHAUDHARY MUNESH RAVINDRASINGH	MChaudhary
5	SHENDE CHAITRALI GANESHRAO	Shende
6	BAGDE SAKSHI SATISH	SBagde
7	BAGDE SHRADDHA BABAN	SBagde
8	SINGH NEHA DARA	NSingh
9	PARSHURAMKAR GAURAV MANOHAR	GPارشورامکار
10	DHABEKAR SWATI FATTU	SDhabekar
11	CHODHARY DHANSHREE NARENDRA	DChodhary
12	PAUNIKAR YASHWANT RAJU	YPaunikar
13	AGARKAR PRANJAL VIJAY	PAgarkar
14	LAKHE PRANAV BHUPESH	Lakhe
15	MOTWANI VARUN DOLAT	VMotwani
16	JANGADE SANJANA SADANAND	SJangde
17	NAYAB NIDHI ARVIND	NNayab
18	KENE JANVI SUBHASH	JKene
19	KHAPRE MUSKAN PRAKASH	Mkhapre
20	SHARMA SNEHA RANJAYKUMAR	Ssharma
21	GANVIR ISHITA HEMANT	IGanvir

22	KARKI SRUSITI SUBHASHI	Sarkhi
23	MEENA RUCHI MAHENDRA	RMema
24	BEDEKAR TUSHAR VAIBHAV	.
25	DHAKATE SAKSHI PRAMOD	Dhakate
26	PANTAWANE SHREYA SANJAY	Pantawane
27	BHAGAT SANJIVANI SAGAR	Bhagat
28	LAKDE SHREYASH MAHADEO	Lakhe
29	RAUT DISHA VIJAY	Dareet
30	LODHIKAR ANJALI NANESHWAR	Alodhikar
31	BALAPURE PARI GAJANAN	PBalapure
32	BHIWGADE SHRINAY YOGESH	Bhiwgaade
33	PATLE DEVESH DHURVAJI	Patle
34	KAWALE GAYATRI VINOD	Gkawale
35	PAROCHE PALAK SATISH	Pparoch
36	JOSHI SANCHIT MADHUSUDAN	Joshi
37	SHINDE NILESH SUNIL	Nshinde
38	KAYARKAR JANHVI DHIRENDRA	Kkayarkar
39	JOSHI ARTI SUBHASH	Artshi
40	PATEL LOKESH SHRINIWAS	Patel
41	MASRAM NIKITA SITARAM	Nikita
42	MESHAM NISHANT DUSHYANT	Mmesham
43	NANNAWARE SAKSHI MURLIDHAR	Snanaware
44	MISHRA MAHEK PRAMOD	Mmishra
45	PATRICK SUMIT PASKAL	Spatrick
46	ZADE GAURI MUKESH	Zade
47	CHANDANKHEDE RACHANA VINESH	Redanan
48	KANOJE KHUSHI SANJAY	Kkanoje
49	JADHAV AASTHA SANJU	Ajadhav
50	BHAGAT KRUNAL GAJANAN	Bbhagat
51	PITALE SHRIVATSA PRASHANT	Spitale
52	JAYSWAL ABHISHEK SANJAY PRASAD	-
53	MANKAR MRUNMAYI RUPESH	Mankar

54	NINAWA PRANOTI RAJKUMAR	Pninawa
55	PATHAK MUSKAN VINAY	Mpathak
56	MESHARAM AYUSH BHARAT	Amesharam
57	MOUNDEKAR VINKU MANIK	Moundekar
58	WASE RUSHIKESH SHUBHAKAR	Wase
59	SIRSAT VIKRANT DEVENDRA	Vsirsat
60	BALODIYA RITIKA VISHNU	Balodiya
61	BILKAR AMISHA SITARAM	Abilkar
62	JAUNJAL GARGI DILIP	Gjainjal
63	MANDAL SURAJ SHANKAR	Smandal
64	RAMAPURE ANUSHKA GANESH	Anushka
65	SHENDE OM RAJESH	Oshende
66	WAGH SARANG VILAS	Swagh
67	MESHARAM NIKHITA RAVIKANT	NMesharam
68	JADHAV VARUN PANDIT	Vjadhav
69	MALIK DIPTI RAJVIRSINGH	Dmalik
70	BHALAVI SIDDHESH RAMESHWAR	Bhalavi
71	PATLE GAURI SHRIKANT	Gpatle
72	AMBEKAR ATHARV RAMBHAU	Ambekar
73	PIMPLE MANYA GANESH	Mpimple
74	DHOLE ISHA ANIL	Ishole
75	GEDAM ROHIT DIPAK	Rgedam
76	DAF PRADNYA CHANDRAKANT	Daf
77	DHADSE VAISHNAVI VIJAY	Vdhadse
78	MISAR KHUSHI MANOJ	Kmisar
79	BANSOD NIKHIL MILIND	NBansode
80	TIDKE PRIYOG RAMKRUSHNA	Ptidke


Course Coordinator
 Dr. S. V. Khangar

**Shri Shivaji Education Society Amaravati's
Science College Congress Nagar, Nagpur
Department of Physics**

**Add-on Certificate Course on Physics behind Green Synthesis of Nanoparticles from
Medicinal Leaves**

THEORY EXAM

Date: 18/10/2023

Max. Marks: 60

Max. Time: 1 Hour

Marks Obtained:

Student Name: -----

- Note:** i) All questions are compulsory
ii) Each question carries two marks
iii) Tick the correct option
-

1. What are nanoparticles?
 - A) Particles with a size between 1 to 100 nanometers
 - B) Particles with a size between 1 to 100 micrometers
 - C) Particles with a size between 1 to 100 millimeters
 - D) Particles with a size greater than 100 nanometers
2. Which physical property of nanoparticles makes them suitable for various applications?
 - A) High density
 - B) Large size
 - C) High surface area to volume ratio
 - D) Low reactivity
3. What is the principle behind green synthesis of nanoparticles from medicinal leaves?
 - A) Using harmful chemicals for synthesis

- B) Employing environmentally friendly methods
 - C) Generating toxic waste during synthesis
 - D) Increasing energy consumption during synthesis
4. Which component of medicinal leaves is primarily responsible for nanoparticle synthesis?
- A) Carbohydrates B) Proteins C) Flavonoids D) Lipids
5. How does the surface plasmon resonance phenomenon contribute to the optical properties of nanoparticles?
- A) It decreases the absorption of light
 - B) It increases the scattering of light
 - C) It enhances the absorption and scattering of light
 - D) It has no effect on the optical properties
6. Which physical phenomenon governs the stability of nanoparticles in solution?
- A) Brownian motion
 - B) Electromagnetic induction
 - C) Newton's laws of motion
 - D) Boyle's law
7. What are the potential biomedical applications of nanoparticles synthesized from medicinal leaves?
- A) Drug delivery B) Imaging C) Tissue engineering D) All of the above
8. How do the unique properties of nanoparticles enhance their effectiveness in targeted drug delivery?
- A) They decrease bioavailability
 - B) They increase toxicity
 - C) They improve stability

- D) They enhance specificity and reduce side effects
9. What is the typical size range of nanoparticles?
A) 1-10 millimeters B) 1-100 micrometers C) 1-100 nanometers D) 1-10 centimeters
10. What property of nanoparticles makes them highly reactive in chemical reactions?
A) Large size B) High density C) High surface area to volume ratio D) Low surface area to volume ratio
11. Green synthesis of nanoparticles involves:
A) Using harmful chemicals
B) High energy consumption
C) Environmentally friendly methods
D) Generating toxic waste
12. Which component of medicinal leaves is often responsible for nanoparticle synthesis?
A) Carbohydrates B) Proteins C) Flavonoids D) Lipids
13. What phenomenon is responsible for the color changes observed in nanoparticles due to surface plasmon resonance?
A) Absorption B) Scattering C) Refraction D) Diffraction
14. What physical principle governs the stability of nanoparticles in solution?
A) Boyle's law B) Archimedes' principle C) Brownian motion D) Newton's laws of motion
15. What are the potential biomedical applications of nanoparticles?
A) Drug delivery B) Imaging C) Tissue engineering D) All of the above
16. How do nanoparticles enhance targeted drug delivery?
A) By increasing toxicity
B) By reducing specificity
C) By decreasing stability
D) By enhancing specificity and reducing side effects
17. Which property of nanoparticles is dependent on their size?
A) Density B) Reactivity C) Surface area to volume ratio D) Color
18. Which technique is commonly used to determine the size distribution of nanoparticles?
A) Scanning Electron Microscopy (SEM)
B) Atomic Force Microscopy (AFM)
C) Dynamic Light Scattering (DLS)
D) X-ray Diffraction (XRD)
19. Which technique provides information about the surface properties of nanoparticles?
A) Transmission Electron Microscopy (TEM)
B) Fourier Transform Infrared Spectroscopy (FTIR)
C) Energy Dispersive X-ray Spectroscopy (EDS)
D) X-ray Photoelectron Spectroscopy (XPS)
20. What information can be obtained from a UV-Vis spectroscopy analysis of nanoparticles?

- A) Size distribution
 - B) Elemental composition
 - C) Optical properties
 - D) Surface charge
21. Which technique is used to determine the crystal structure of nanoparticles?
- A) Scanning Electron Microscopy (SEM)
 - B) Atomic Force Microscopy (AFM)
 - C) X-ray Diffraction (XRD)
 - D) Transmission Electron Microscopy (TEM)
22. What is one potential application of nanoparticles characterized by their surface charge?
- A) Drug delivery
 - B) Catalysis
 - C) Imaging
 - D) Tissue engineering
23. How can the information obtained from nanoparticle characterization techniques be used in material science?
- A) To improve manufacturing processes
 - B) To develop new materials with specific properties
 - C) To understand the behavior of materials at the nanoscale
 - D) All of the above
24. What is the primary objective of green synthesis?
- A) Maximizing chemical waste
 - B) Minimizing environmental impact
 - C) Maximizing energy consumption
 - D) Minimizing cost
25. Which of the following is a characteristic of green synthesis methods?
- A) High energy consumption
 - B) Use of toxic solvents
 - C) Generation of hazardous by-products
 - D) Use of renewable resources
26. Which of the following is a common method used in green synthesis?
- A) Microwave irradiation
 - B) Incineration
 - C) Chlorination
 - D) Hydrolysis
27. Which technique is used to monitor the progress of green synthesis reactions in real-time?
- A) Gas chromatography

B) Nuclear magnetic resonance spectroscopy

C) Infrared spectroscopy

D) Ultraviolet-visible spectroscopy

28. What is a significant advantage of green synthesis over conventional synthesis methods?

A) Higher cost B) Lower yield C) Reduced environmental impact D) Longer reaction times

29. Which of the following is NOT a benefit of green synthesis?

A) Reduced waste generation

B) Enhanced energy consumption

C) Safer working conditions

D) Utilization of renewable resources

30. Which industry is particularly interested in green synthesis methods for product development?

A) Automotive B) Textile C) Chemical D) Construction

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar Nagpur
Department of Physics
2023-2024

Add-on course Examination

Title: "Certificate Course: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves"

Course Coordinator: Dr. Sugandha Khangar

DATE: 16/11/2022

Total Marks: 100


STATEMENT OF MARKS

Sr. No.	Name of Students	Theory Marks (60M)	Practical Marks (40M)	Total (100M)	Grade
1	SANGOLE AKANSHA SUBHASH	50	34	84	A
2	MARBATE SANSKRUTI RAJENDRA	44	38	82	A
3	YADAV SAPNA JAIKRISHNA	52	38	90	A+
4	CHAUDHARY MUNESH RAVINDRASINGH	56	37	93	A+
5	SHENDE CHAITRALI GANESHRAO	52	38	90	A+
6	BAGDE SAKSHI SATISH	56	38	94	A+
7	BAGDE SHRADDHA BABAN	58	30	88	A
8	SINGH NEHA DARA	40	35	75	A
9	PARSHURAMKAR GAURAV MANOHAR	50	38	88	A
10	DHABEKAR SWATI FATTU	44	35	79	A
11	CHOUDHARY DHANSHREE NARENDRA	52	38	90	A+
12	PAUNIKAR YASHWANT	44	34	78	A

	RAJU				
13	AGARKAR PRANJAL VIJAY	58	34	92	A+
14	LAKHE PRANAV BHUPESH	56	36	92	A+
15	MOTWANI VARUN DOLAT	54	30	84	A
16	JANGADE SANJANA SADANAND	58	30	88	A
17	NAYAB NIDHI ARVIND	44	30	74	B+
18	KENE JANVI SUBHASHI	56	38	94	A+
19	KHAPRE MUSKAN PRAKASHI	54	30	84	A
20	SHARMA SNEHA RANJAYKUMAR	56	34	90	A+
21	GANVIR ISHITA HEMANT	58	36	94	A+
22	KARKI SRUSHTI SUBHASHI	60	32	82	A
23	MEENA RUCHI MAHENDRA	58	30	78	B
25	DHAKATE SAKSHI PRAMOD	58	32	90	A+
26	PANTAWANE SHREYA SANJAY	54	38	92	A+
27	BHAGAT SANJIVANI SAGAR	52	38	90	A+
28	LAKDE SHREYASH MAHADEO	54	32	86	A
29	RAUT DISHA VIJAY	58	30	88	A
30	LODHIKAR ANJALI NANESHWAR	42	38	80	A
31	BALAPURE PARI GAJANAN	52	38	90	A+
32	BHIWGADE SHRINAY YOGESH	56	40	96	A+
33	PATLE DEVESH DHURVAJI	58	40	98	A+
34	KAWALE GAYATRI VINOD	50	32	82	A
35	PAROCHE PALAK SATISH	54	28	82	A
36	JOSHI SANCHIT MADHUSUDAN	50	36	86	A
37	SHINDE NILESH SUNIL	48	36	84	A
38	KAYARKAR JANHVI DHIRENDRA	44	38	82	A
39	JOSHI ARTI SUBHASHI	50	36	86	A

40	PATEL LOKESH SHRINIWAS	50	38	88	A
41	MASRAM NIKITA SITARAM	60	30	90	A+
42	MESHAM NISHANT DUSHYANT	52	40	92	A+
43	NANNAWARE SAKSHI MURI IDHAR	54	40	94	A+
44	MISHRA MAHEK PRAMOD	42	38	80	A
45	PATRICK SUMIT PASKAL	58	30	88	A+
46	ZADE GAURI MUKESH	52	38	90	A+
47	CHANDANKHEDE RACHANA VINESH	58	36	94	A+
48	KANOJE KHUSHI SANJAY	54	36	90	A+
49	JADHAV AASTHA SANJU	52	30	82	A
50	BHAGAT KRUNAL GAJANAN	50	30	80	A
51	PITALE SHRIVATSA PRASHANT	58	32	90	A+
52	JAYSWAL ABHISHEK SANJAY PRASAD	50	38	88	A+
53	MANKAR MRUNMAYI RUPESH	54	28	82	A
54	NINAVE PRANOTI RAJKUMAR	58	38	96	A+
55	PATHAK MUSKAN VINAY	50	34	84	A
56	MESHAM AYUSH BHARAT	52	30	82	A
57	MOUNDEKAR VINKU MANIK	50	31	81	A
58	WASE RUSHIKESH SHUBHAKAR	58	38	96	A+
59	SIRSAT VIKRANT DEVENDRA	46	38	84	A
60	BALODIYA RITIKA VISHNU	52	38	90	A+
61	BILKAR AMISHA SITARAM	54	39	93	A+
62	JAUNJAL GARGI DILIP	56	30	86	A
63	MANDAL SURAJ SHANKAR	54	40	94	A+
64	RAMAPURE ANUSHKA GANESH	52	38	90	A+
65	SHENDE OM RAJESH	54	30	84	A
66	WAGH SARANG VILAS	50	36	86	A+
67	MESHAM NIKHITA RAVIKANT	52	30	82	A
68	JADHAV VARUN PANDIT	52	38	90	A+
69	MALIK DIPTI RAJVIR SINGH	44	30	74	B
70	BHALAVI SIDDHESH RAMESHWAR	50	38	88	A

71	PATLE GAURI SHRIKANT	58	36	94	A+
72	AMBEKAR ATHARV RAMBHAU	50	39	89	A
73	PIMPLE MANYA GANESH	60	30	80	A
74	DHOLE ISHA ANIL	60	34	94	A+
75	GEDAM ROHIT DIPAK	54	30	84	A
76	DAF PRADNYA CHANDRAKANT	58	34	92	A+
77	DHADSE VAISHNAVI VIJAY	58	30	88	A
78	MISAR KHUSHI MANOJ	54	36	90	A+
79	BANSOD NIKHIL MILIND	58	38	96	A+
80	TIDKE PRIYOG RAMKRUSHNA	50	32	82	A


 Dr. Sugandha V. Khangar
 Course Coordinator
 Department of Physics



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



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 Recognized Centre for Higher Learning and Research
 Mentor College under 'PARAMARSHI Scheme', UGC, New Delhi

Add-on Course

Course Exam Name: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

Name of Student: <i>Model Answer sheet</i>		INSTRUCTIONS FOR FILLING THE SHEET	
Roll No.: <input type="text"/>		1. This sheet should not be folded or crushed.	
Session: 2023-24		2. Use only blue/ black ball point pen to fill the circles.	
Test Date: 18/10/2023		3. Use of pencil is strictly prohibited.	
Max. Marks: 60		4. Circles should be darkened completely and properly.	
Invigilator Signature: <i>[Signature]</i>		5. Cutting and erasing on this sheet is not allowed.	
Obtained Marks: <input type="text"/>		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	
		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

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[Signature]

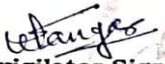


Student Answer sheet



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Add-on Course				
Course Exam Name: Certificate Course on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves				
Name of Student: ..Akansha S. Sangale.....		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.		
Roll No.: 001	Session: 2023-24			
Test Date: 18/10/2023	Max. Marks: 60			
 Invigilator Signature	Obtained Marks:	50	WRONG METHODS 	CORRECT METHOD 

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D					
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CERTIFICATE

Mr./Ku. Sapna J Yadav is awarded with certificate on successful completion of the course entitled, Certificate course in Physics behind Green Synthesis of Nanoparticles from medical leaves.

Session 2023-24 under Add-on course conducted for 30 hours from 01/08/2023 to 07/10/2023 by Department of Physics, SSES's, Science College, congress Nagar, Nagpur 440012.

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

Dr. S. V. Khangar
Coordinator, Department of Physics

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

**Shri Shivaji Education Society Amaravati's
Science College Congress Nagar, Nagpur
Department of Physics**

Course Feedback on Add-on Course

Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves

Undergraduate Course for Physics Students

Duration: 1/08/2023 to 07/10/2023

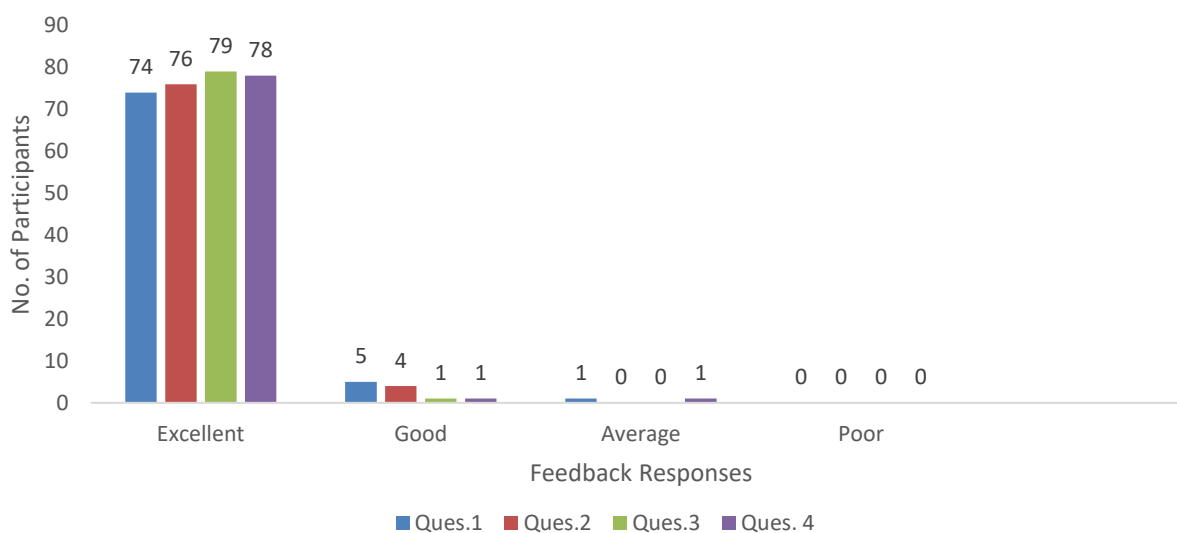
Name of Course Coordinator: Dr. S. V. Khangar

Course Feedback Form

Name: _____

- 1) How would you rate the overall quality of the course content?
 Excellent
 Good
 Average
 Poor
- 2) How relevant was the course content to your professional or academic goals?
 Excellent
 Good
 Average
 Poor
- 3) How would you rate the hands-on lab sessions and practical exercises?
 Excellent
 Good
 Average
 Poor
- 4) How would you rate the availability and quality of resources (e.g., textbooks, online materials)?
 Excellent
 Good
 Average
 Poor

Add-on Courses: Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves : Students Feedback



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