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 2 Jan 2024 to22 March 2024

Course Coordinator: Dr. S. V. Khangar

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 Amaravati's

Science College Congress Nagar, Nagpur

Department of Physics

Course Report on Add-on Course

"Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves"

Undergraduate Course for Physics Students

Duration: 2/01/2024 to 22/03/2024

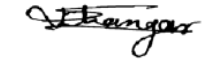
Total Students: 55

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 55 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 emphasizing 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 55 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.

Action Taken: To understand the **Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves** department of physics conducted the add-on course. Total 55 students registered for this course. Students participated actively in this course tried to understand about Green Synthesis of Nanoparticles.



Course Coordinator

Dr. S. 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: 12/12/2023

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 "**Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves**" from **02/01/2024-22/03/2024. The course registration will start from 15/12/2023 to 01/01/2024. 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: 31/12/2023

All the registered students of the department of Physics are hereby informed that the Physics department commencing a certificate course on "**Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves**" from **02/01/2024-22/03/2024.** The registered students are requested to do the regular classes and practical as per the scheduled timetable. For any query contact to course coordinator.

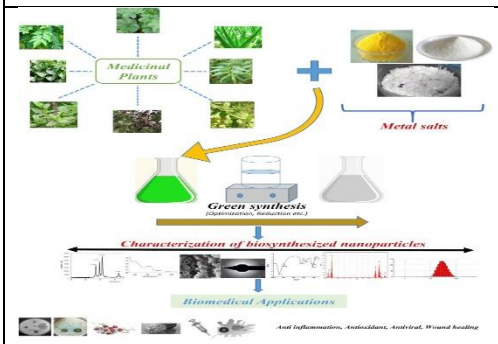
Course coordinator: Dr. Sugandha V. Khangar
Contact Number: 9975768840

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

Session 2023-2024

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



Free Certificate Course for College Students

Duration: 30 Hours (10 Weeks)
Course Duration: ***02/01/2024 to 22/03/2024***

Frequency: Weekly sessions (2-3 hours each)

Process of Registration: Early birds will be admitted first.
Registration Date: 15/12/2023 to 01/01/2024
Exam: 07/04/2024

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

Course Overview:

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

Department of Physics
Shri Shivaji Education society Amravati's, Science college
Congress Nagar, Nagpur – 440012

Last Date of Registration: 1/01/2024
Course Coordinator: Dr. Sugandha V. Khangar **Contact: 9975768840**

Course Coordinator

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:

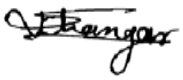
- Basic knowledge of quantum mechanics and optics
- Familiarity with laboratory techniques (preferred and mandatory)

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	



Course Coordinator

Principal

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 Freen 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.

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 Physics

Certificate Course

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

Registration Sheet-2023-2024

Course Coordinator: Dr. S. V. Khangar

Sr. No.	Name of Students
1	NITNAWAARE AACHAL DINESH
2	BHASMOTE AARADHANA RAJENDRA
3	KANGALE ACHAL RUSHI
4	MENDWADE AISHWARYA PRAKASH
5	PALANDURKAR ANUSHKA AMAR
6	SAHU APURVA TAPAN
7	KUNDARPAWAR ARYA VIKAS
8	KALE AVANI PREMDAS
9	BAGDE AYUSHI MANOJKUMAR
10	KHADSE CHETANA MORESHWAR
11	CHOUDHARI DURGESHWARI RAMPRASAD
12	DUBEY ISHA ROSHAN
13	DESHMUKH JANHAVI VIRENDRA
14	GOWARDIPE KAJAL PURUSHOTTAM
15	FULZELE KASHISH GAJENDRA
16	SINGH KASHISH NAGENDRA
17	CHANIANA KIRANPREET KAUR
18	THAKUR KRITI AINKATRAO
19	BAWANKULE LAXMI DEVIDAS
20	GONNADE MADHURIMA SHAILESH
21	NAYAK MAHEK GHANSHYAM
22	SHEIKH MANTESHA TABASSUM
23	MESHRAM MASUM SUDHAKAR
24	TUPAT MAYURI RAJESH
25	GOUTIYA MUSKAN JAGDISH

26	HAJARE POOJA RAJU
27	SAPATE PORNIMA PRABHU
28	DHURVE PRANJALI KAMALDEV
29	FULKUWAR PRIYA SANTOSH
30	ADHAU PURVA PRAMOD
31	SONTAKKE RAJVEE SAROJ
32	VARMA RIYA JITENDRA
33	BAGHEL RIYA KISHOR
34	WASNIK RUTIKA VINAYAK
35	DHORE SADICHCHHA DILIP
36	BHUJADE SAKSHI BABLU
37	NIMBADE SHAKSHI PRAKASH
38	SINGH SHEETAL AZADE
39	CHAUDHARY SHRUTI MAHARAJSINGH
40	JAMBHULKAR SHRUTI MAHENDRA
41	BAGHEL SONAM SANTOSHKUMAR
42	TONGE SUHANI ANAND
43	LUTE SUHANI RAMESHWAR
44	THAKARE SUHANI SUKHADEO
45	PAWAR SUMAN SHEMEKHIL
46	GAJBHIYE SWEJAL PRASHANT
47	YADAV TAMANNA VIJAY
48	CHANNE TANISHKA PRAVEEN
49	TOMAR TANU ALEXNDER KUMAR
50	BAIG TASMIYA HAMID
51	KHARBIKAR DEVESH RAJU
52	VYAS HIMANSHU MUKESH
53	ARVIWALA HUZEFA KHUZEMA
54	BARSAGADE KALASH SUDHAKAR
55	GUPTA KSHITIJ ADITYASHEKHAR

Course Coordinator
Dr. S. V. Khangar

Attendance Sheet

Certificate Course

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

Course Duration: 2/01/2024-22/03/2024

Sr.No.		Students Full Name	Week-1			Week-2			Week-3			Week-4			Week-5			Week-6			Week-7			Week-8			Week-9			Week-10		
			25/1 T	26/1 T	27/1 P	29/1 T	30/1 T	31/1 P	1/2 T	2/2 T	3/2 P	5/2 T	6/2 T	7/2 P	8/2 T	9/2 T	10/2 P	12/2 T	13/2 T	14/2 P	16/2 T	17/2 T	18/2 P	23/2 T	24/2 T	24/2 P	1/3 T	2/3 T	2/3 P	8/3 T	15/3 T	16/3 P
1	Ku	NITNAWAARE AACHAL DINESH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P
2	Ku	BHASMOTE AARADHANA RAJENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P
3	Ku	KANGALE ACHAL RUSHI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		.	.	.	P
4	Ku	MENDWADE AISHWARYA PRAKASH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P
5	Ku	PALANDURKAR ANUSHKA AMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P
6	Ku	SAHU APURVA TAPAN	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	.	P	P	P
7	Ku	KUNDARPAWAR ARYA VIKAS	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P
8	Ku	KALE AVANI PREMDAS	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P
9	Ku	BAGDE AYUSHI MANOJKUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P
10	Ku	KHADSE CHETANA MORESHWAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P
11	Ku	CHOUDHARI DURGESHWARI R.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P
12	Ku	DUBEY ISHA ROSHAN	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P	P	P
13	Ku	DESHMUKH JANHAVI VIRENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	P	P
14	Ku	GOWARDIPE KAJAL PURUSHOTTAM	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P
15	Ku	FULZELE KASHISH GAJENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	.	.	.	P	P	P	P	P
16	Ku	SINGH KASHISH NAGENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	.	.	.	P	P	P	P	P
17	Ku	CHANIANA KIRANPREET KAUR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	.	.	P	P	.	P	.	P	.	.	.
18	Ku	THAKUR KRITI AINKATRAO	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P
19	Ku	BAWANKULE LAXMI DEVIDAS	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	P	P	P	P	P	P	P	P	.	.	P
20	Ku	GONNADE MADHURIMA SHAILESH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	-	.	P	P	.	P	P	P	P	P	P
21	Ku	NAYAK MAHEK GHANSHYAM	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	.	P	P	P
22	Ku	SHEIKH MANTESHA TABASSUM	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P
23	Ku	MESHRAM MASUM SUDHAKAR	P	P	P	P	P	P	P	P	P	.	.	P	.	-	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P
24	Ku	TUPAT MAYURI RAJESH	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	P	P	P	.	.	.	.	P	P	P	P	P	P
25	Ku	GOUTIYA MUSKAN JAGDISH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P
26	Ku	HAJARE POOJA RAJU	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P
27	Ku	SAPATE PORNIMA PRABHU	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
28	Ku	DHURVE PRANJALI KAMALDEV	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
29	Ku	TULKUWAR PRIYA SANTOSH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
30	Ku	ADHAU PURVA PRAMOD	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
31	Ku	SONTAKKE RAJVEE SAROJ	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
32	Ku	VARMA RIYA JITENDRA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
33	Ku	BAGHEL RIYA KISHOR	P	P	P	P	P	P	P	P	P	P	P	P	.	P	.	P	.	.	.	P	P	P	P	P	P	P	P	P	.	.
34	Ku	WASNIK RUTIKA VINAYAK	P	P	P	P	P	P	P	P	P	.	P	.	.	P	.	.	.	.	P	P	.	P	.	P	.	P	P	P	P	P
35	Ku	DHORE SADICHCHHA DILIP	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.
36	Ku	BHUJADE SAKSHI BABLU	P	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	.	P	.	P	P	P	P	P	P	P	P
37	Ku	NIMBADE SHAKSHI PRAKASH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P
38	Ku	SINGH SHEETAL AZADE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P
39	Ku	CHAUDHARY SHRUTI MAHARAJSINGH	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P
40	Ku	JAMBHULKAR SHRUTI MAHENDRA	P	P	P	P	P	P	P	P	P	P	.	.	.	.	.	P	.	P	.	.	P	.	.	P	.	.	.	.	P	P
41	Ku	BAGHEL SONAM SANTOSHKUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
42	Ku	TONGE SUHANI ANAND	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
43	Ku	LUTE SUHANI RAMESHWAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P
44	Ku	THAKARE SUHANI SUKHADEO	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	.	P	.	P	P	P	P	P	.	.	.	P	P	P
45	Ku	PAWAR SUMAN SHEMEKHIL	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	.	P	P	P	P	P	P	.	.	.	P	P	P	P	P
46	Ku	GAJBHIYE SWEJAL PRASHANT	P	P	P	P	P	P	P	P	P	P	.	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P
47	Ku	YADAV TAMANNA VIJAY	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	.	P	.	.	P	.	P	.	P	P	P
48	Ku	CHANNE TANISHKA PRAVEEN	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P
49	Ku	TOMAR TANU ALEXNDER KUMAR	P	P	P	P	P	P	P	P	P	P	P	P	.	P	.	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P
50	Ku	BAIG TASMIYA HAMID	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
51	Mr	KHARBIKAR DEVESH RAJU	P	P	P	P	P	P	P	P	P	.	P	P	.	.	.	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P
52	Mr	VYAS HIMANSHU MUKESH	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	.	.	.	P	.	P	.	P	P	P	P	P
53	Mr	ARVIWALA HUZEFA KHUZEMA	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
54	Mr	BARSAGADE KALASH SUDHAKAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.
55	Mr	GUPTA KSHITIJ ADITYASHEKHAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	.	P	P	P	P	P			
		Sign of Teacher																														

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: 20/03/2024

All the registered students for certificate course on "**Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves**" are hereby informed that their Final exam is held on 07/04/2024 **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.

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: 7/04/2024

Sr. No.	Name of Students	Sign
1	NITNAWAARE AACHAL DINESH	
2	BHASMOTE AARADHANA RAJENDRA	
3	KANGALE ACHAL RUSHI	
4	MENDWADE AISHWARYA PRAKASH	
5	PALANDURKAR ANUSHKA AMAR	
6	SAHU APURVA TAPAN	
7	KUNDARPAWAR ARYA VIKAS	
8	KALE AVANI PREMDAS	
9	BAGDE AYUSHI MANOJKUMAR	
10	KHADSE CHETANA MORESHWAR	
11	CHOUDHARI DURGESHWARI RAMPRASAD	
12	DUBEY ISHA ROSHAN	
13	DESHMUKH JANHAVI VIRENDRA	
14	GOWARDIPE KAJAL PURUSHOTTAM	
15	FULZELE KASHISH GAJENDRA	
16	SINGH KASHISH NAGENDRA	
17	CHANIANA KIRANPREET KAUR	
18	THAKUR KRITI AINKATRAO	
19	BAWANKULE LAXMI DEVIDAS	
20	GONNADE MADHURIMA SHAILESH	
21	NAYAK MAHEK GHANSHYAM	

22	SHEIKH MANTESHA TABASSUM	
23	MESHRAM MASUM SUDHAKAR	
24	TUPAT MAYURI RAJESH	
25	GOUTIYA MUSKAN JAGDISH	
26	HAJARE POOJA RAJU	
27	SAPATE PORNIMA PRABHU	
28	DHURVE PRANJALI KAMALDEV	
29	FULKUWAR PRIYA SANTOSH	
30	ADHAU PURVA PRAMOD	
31	SONTAKKE RAJVEE SAROJ	
32	VARMA RIYA JITENDRA	
33	BAGHEL RIYA KISHOR	
34	WASNIK RUTIKA VINAYAK	
35	DHORE SADICHCHHA DILIP	
36	BHUJADE SAKSHI BABLU	
37	NIMBADE SHAKSHI PRAKASH	
38	SINGH SHEETAL AZADE	
39	CHAUDHARY SHRUTI MAHARAJSINGH	
40	JAMBHULKAR SHRUTI MAHENDRA	
41	BAGHEL SONAM SANTOSHKUMAR	
42	TONGE SUHANI ANAND	
43	LUTE SUHANI RAMESHWAR	
44	THAKARE SUHANI SUKHADEO	
45	PAWAR SUMAN SHEMEKHIL	
46	GAJBHIYE SWEJAL PRASHANT	
47	YADAV TAMANNA VIJAY	
48	CHANNE TANISHKA PRAVEEN	
49	TOMAR TANU ALEXNDER KUMAR	
50	BAIG TASMIYA HAMID	

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: 7/04/2024 **Max. Time: 1 Hour**
Max. Marks: 60 **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 on Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves"

Course Coordinator: Dr. Sugandha V. Khangar

DATE: 15/04/2024 **Total Marks: 100**

STATEMENT OF MARKS

Sr. No.	Name of Students	Theory Marks (60M)	Practical Marks (40M)	Total (100M)	Grade
1	NITNAWAARE AACHAL DINESH	52	38	90	A+
2	BHASMOTE AARADHANA RAJENDRA	44	38	82	A
3	KANGALE ACHAL RUSHI	52	38	90	A+
4	MENDWADE AISHWARYA PRAKASH	56	37	93	A+
5	PALANDURKAR ANUSHKA AMAR	52	38	90	A+
6	SAHU APURVA TAPAN	56	38	94	A+
7	KUNDARPAWAR ARYA VIKAS	58	30	88	A
8	KALE AVANI PREMDAS	40	35	75	A
9	BAGDE AYUSHI MANOJKUMAR	50	38	88	A
10	KHADSE CHETANA MORESHWAR	44	35	79	A
11	CHOUDHARI DURGESHWARI RAMPRASAD	52	38	90	A+
12	DUBEY ISHA ROSHAN	44	34	78	A
13	DESHMUKH JANHAVI VIRENDRA	58	34	92	A+
14	GOWARDIPE KAJAL PURUSHOTTAM	56	36	92	A+
15	FULZELE KASHISH GAJENDRA	54	30	84	A
16	SINGH KASHISH NAGENDRA	58	30	88	A
17	CHANIANA KIRANPREET KAUR	44	30	74	B+
18	THAKUR KRITI AINKATRAO	56	38	94	A+
19	BAWANKULE LAXMI DEVIDAS	54	30	84	A
20	GONNADE MADHURIMA SHAILESH	56	34	90	A+

21	NAYAK MAHEK GHANSHYAM	58	36	94	A+
22	SHEIKH MANTESHA TABASSUM	60	32	82	A
23	MESHRAM MASUM SUDHAKAR	58	30	78	A
25	TUPAT MAYURI RAJESH	58	32	90	A+
26	GOUTIYA MUSKAN JAGDISH	54	38	92	A+
27	HAJARE POOJA RAJU	52	38	90	A+
28	SAPATE PORNIMA PRABHU	54	32	86	A
29	DHURVE PRANJALI KAMALDEV	58	30	88	A
30	FULKUWAR PRIYA SANTOSH	42	38	80	A
31	ADHAU PURVA PRAMOD	52	38	90	A+
32	SONTAKKE RAJVEE SAROJ	56	40	96	A+
33	VARMA RIYA JITENDRA	58	40	98	A+
34	BAGHEL RIYA KISHOR	50	32	82	A
35	WASNIK RUTIKA VINAYAK	54	28	82	A
36	DHORE SADICHCHHA DILIP	50	36	86	A
37	BHUJADE SAKSHI BABLU	48	36	84	A
38	NIMBADE SHAKSHI PRAKASH	44	38	82	A
39	SINGH SHEETAL AZADE	50	36	86	A
40	CHAUDHARY SHRUTI MAHARAJSINGH	50	38	88	A
41	JAMBHULKAR SHRUTI MAHENDRA	60	30	90	A+
42	BAGHEL SONAM SANTOSHKUMAR	52	40	92	A+
43	TONGE SUHANI ANAND	54	40	94	A+
44	LUTE SUHANI RAMESHWAR	42	38	80	A
45	THAKARE SUHANI SUKHADEO	58	30	88	A+
46	PAWAR SUMAN SHEMEKHIL	52	38	90	A+
47	GAJBHIYE SWEJAL PRASHANT	58	36	94	A+
48	YADAV TAMANNA VIJAY	54	36	90	A+
49	CHANNE TANISHKA PRAVEEN	52	30	82	A
50	TOMAR TANU ALEXNDER KUMAR	50	30	80	A
51	KHARBIKAR DEVESH RAJU	50	34	84	A
52	VYAS HIMANSHU MUKESH	50	30	80	A
53	ARVIWALA HUZEFA KHUZEMA	52	38	90	A+
54	BARSAGADE KALASH SUDHAKAR	54	38	92	A+
55	GUPTA KSHITIJ ADITYASHEKHAR	56	38	94	A+

Dr. Sugandha V. Khangar
Course Coordinator
Department of Physics

Model Answer sheet

Shri Shivaji Education Society, Amravati's

SCIENCE COLLEGE

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

Accredited with CGPA of 3.51 at 'A+' grade by NAAC, Bangalore
A "College with Potential for Excellence" identified by UGC New Delhi.
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Mentor College under 'PARAMARSH 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: .....

Roll No.: | | | | **Session: 2023-24**

Test Date: 7/04/2024 | **Max. Marks: 60**

Invigilator Signature | **Obtained Marks:**

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

WRONG METHODS ⊗ ⦿ ⊜ ✓ CORRECT METHOD ○ ○ ○ ●

	A	B	C	D
1	●	○	○	○
2	○	○	●	○
3	○	●	○	○
4	○	○	●	○
5	○	○	●	○
6	●	○	○	○
7	○	○	○	●
8	○	○	○	●
9	○	○	●	○
10	○	○	●	○
11	○	○	●	○
12	○	○	●	○
13	●	○	○	○
14	○	○	●	○
15	○	○	○	●
16	○	○	○	●
17	○	○	●	○
18	○	○	●	○
19	○	○	○	●
20	○	○	○	●
21	○	○	●	○
22	●	○	○	○
23	○	○	○	●
24	○	●	○	○
25	○	○	○	●
26	●	○	○	○
27	○	○	○	●
28	○	○	●	○
29	○	●	○	○
30	○	○	●	○
31	○	○	○	○
32	○	○	○	○
33	○	○	○	○
34	○	○	○	○
35	○	○	○	○
36	○	○	○	○
37	○	○	○	○
38	○	○	○	○
39	○	○	○	○
40	○	○	○	○
41	○	○	○	○
42	○	○	○	○
43	○	○	○	○
44	○	○	○	○
45	○	○	○	○
46	○	○	○	○
47	○	○	○	○
48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

Valued 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: Ms. Anushka Palandurkar

Roll No.: 005 **Session:** 2023-24

Test Date: 7/04/2024 **Max. Marks:** 60

Invigilator Signature **Obtained Marks:** 52

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6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS ⊗ ⊙ ⊘ ✓ CORRECT METHOD ○ ○ ○ ●

	A	B	C	D
1	●	○	○	○
2	○	○	●	○
3	○	●	○	○
4	○	○	●	○
5	○	○	●	○
6	●	○	○	○
7	○	○	○	●
8	○	○	○	●
9	○	○	●	○
10	○	○	●	○
11	○	●	○	○
12	○	○	●	○
13	●	○	○	○
14	○	●	○	○
15	○	○	○	●
16	○	○	○	●
17	○	○	●	○
18	○	○	○	●
19	○	○	○	●
20	○	○	○	●
21	○	○	●	○
22	●	○	○	○
23	○	○	○	●
24	○	●	○	○
25	○	○	○	●
26	○	●	○	○
27	○	○	○	●
28	○	○	●	○
29	○	●	○	○
30	○	○	●	○
31	○	○	○	○
32	○	○	○	○
33	○	○	○	○
34	○	○	○	○
35	○	○	○	○
36	○	○	○	○
37	○	○	○	○
38	○	○	○	○
39	○	○	○	○
40	○	○	○	○
41	○	○	○	○
42	○	○	○	○
43	○	○	○	○
44	○	○	○	○
45	○	○	○	○
46	○	○	○	○
47	○	○	○	○
48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

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SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

Accredited with CGPA of 3.51 at 'A+' Grade

A College with Potential for Excellence

CERTIFICATE

Mr./Ku. ***Anushka Palandurkar*** is awarded with certificate on successful completion of the course entitled, Certificate Course in **"Physics behind Green Synthesis of Nanoparticles from Medicinal Leaves".** Session 2023-24 under Add-on course conducted for **30 hours from 02/01/2024 to 22/03/2024** by Department of Physics, SSESA'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,

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

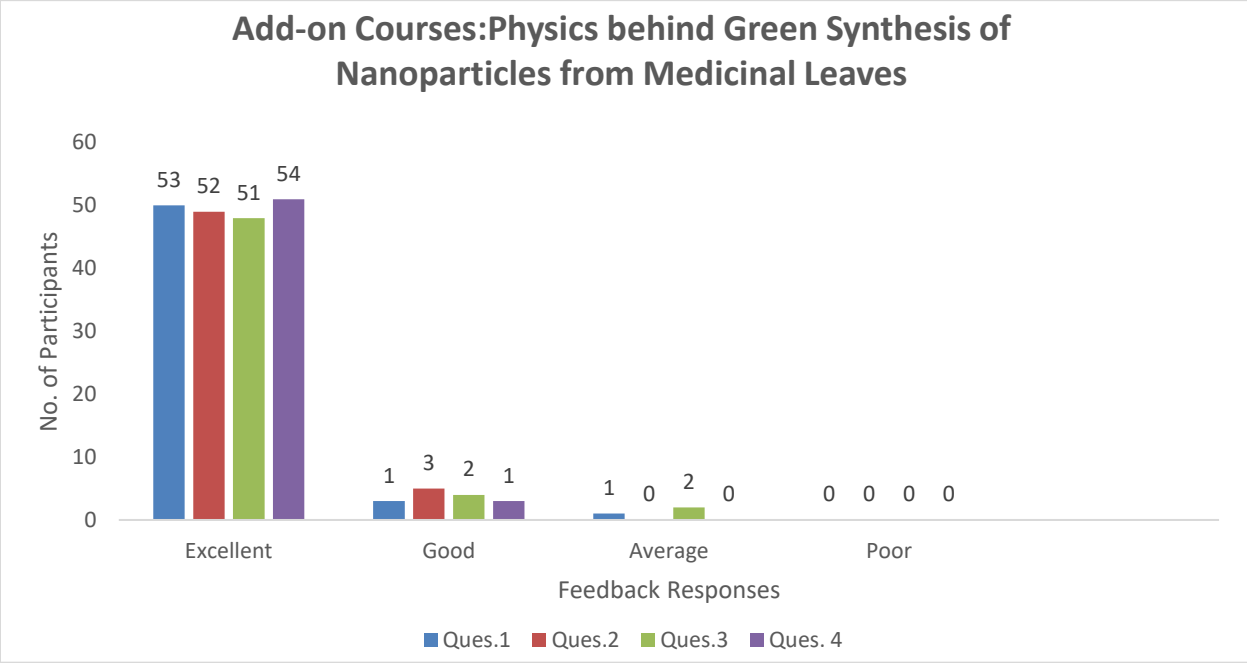
Duration: ***02/01/2024 to 22/03/2024***

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



Dr A A Halder
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Science College,
Congress Nagar, Nagpur

Prof. M. P. Dhore
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