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 2022-2023

Course Title: Certificate Course on Dobsonian Telescope Design, Construction and Use

Duration – 30 Hours (10 Weeks)

Course Start from 16 Aug 2022 to 22 Oct. 2022

Course Coordinator: Dr. S. V. Khangar

Shri Shivaji Education Society Amaravati's

Science College Congress Nagar, Nagpur

Department of Physics

Course Report on Add-on Course

"Certificate Course on Dobsonian Telescope: Design, Construction and Use"

Undergraduate Course for Physics Students

Duration: 16/08/2022 to 22/10/2022

Total Students: 80

This 10-week add-on course provided B.Sc. Physics students with a comprehensive understanding of the Dobsonian Telescope, its design, construction and use. The course was conducted by Dr. S. V. Khangar, Assistant Professor, Department of Physics SSES Amt's Science College Congress Nagar Nagpur. Total 80 Students of B.Sc. I, II and III, year Physics were enrolled for the course.

The course covered design principles, construction techniques, and practical use for amateur astronomy emphasizing hands-on experience and real-world applications. This course also provide a comprehensive learning experience in Dobsonian telescope from design and construction and practical observational techniques to UG students. The students were evaluated through MCQ based final exam of 60 marks and practical lab sessions and hands on sessions of 40 marks. All 80 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 designing and construction of Dobsonian telescope & practical observational techniques.

The 10-week Certificate Course on Dobsonian Telescope: Design, Construction and Use was a valuable addition to the undergraduate physics curriculum, equipping students with essential knowledge and skills in designing and construction of Dobsonian telescope & practical observational techniques. The course successfully combined theoretical knowledge with hands-on experiences, students gained the skills and confidence to use Dobsonian telescopes for exploring the wonders of the night

Course Coordinator

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

Subject: Permission to conduct the add on courses in the Physics department (2022-2023)

Respected Sir,

This is to request you that, we wish to conduct the add on courses in Physics department these are the certificate courses of thirty hours' time duration.

The details of the courses are submitted here with.

Hence please permit to run the same and oblige me.

Thanking you

Yours sincerely

2/07/2022

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

Permitted

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Physics

Add-on Certificate Course (2022-2023)

Certificate Course: Dobsonian Telescope: Design, Construction and Use

NOTICE
(For UG)

Date:1/08/2022

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 **"Dobsonian Telescope: Design, Construction and Use"** from **16/08/2022 to 22/10/2022. For this course registration will start from 06/08/2022 to 14/08/2022. Interested students contact to course coordinator for registration.**

Note: registration is free

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 (2022-2023)

Certificate Course: Dobsonian Telescope: Design, Construction and Use

NOTICE
(For UG)

Date: 12/08/2022

All the registered students of the department of Physics are hereby informed that the Physics department commencing a certificate course on "**Dobsonian Telescope: Design, Construction and Use**" from **16/08/2022 to 22/10/2022.** 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

SSES AMT'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR-12
(Certificate Course on Dobsonian Telescope: Design, Construction and Use)

Time Table

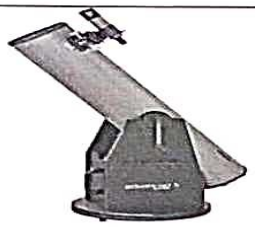
Day	Theory	Room No
Friday	SVK (C4) Theory 4.00 PM – 5.00 PM	C6
Saturday	SKS (C4) Theory, 4.00 PM – 5.00 PM	C6
	SVK and whole staff practical, 6:30 PM – 7:30 PM	C-Block open Terrace

Course coordinator

Dr. Sugandha V. Khangar

Session 2022-2023

Certificate Course on Dobsonian Telescope: Design, Construction and Use



Free Certificate Course for College Students

Duration: 30 Hours (10 Weeks)
(From 16/08/2022 to 22/10/2022)

Frequency: Weekly sessions (2-3 hours each) including field trips and observational sessions
Process of Registration: Early birds will be admitted first.
Registration Date: 06/08/2022 to 14/08/2022
Exam Date: 25/10/2022

Course Objectives:

1) **Understanding Dobsonian Telescope Basics**
2) **Optical and Mechanical Components**
3) **Design and Construction Skills**
4) **Collimation and Maintenance**
5) **Observational Techniques**
6) **Advanced Topics**
7) **Safety and Ethics**

Course Overview:

This certificate course provides participants with a comprehensive understanding of Dobsonian telescopes, covering their design principles, construction techniques, and practical use for amateur astronomy. This course also offers participants a comprehensive learning experience in Dobsonian telescope technology, from design and construction to practical observational techniques. By combining theoretical knowledge with hands-on experiences, participants will gain the skills and confidence to build, maintain, and use Dobsonian telescopes for exploring the wonders of the night sky.

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

Last Date of Registration: 14/08/2022
Course Coordinator: Dr. Sugandha V. Khangar **Contact: 9975768840**

Dr. S. V. Khangar
Assistant Professor
Department of Physics
Shri Shivaji Education Society Amravati's
Science College

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

DEPARTMENT OF PHYSICS

COURSE MODULE AND SYLLABUS

Course Title:

Certificate Course on Dobsonian Telescope: Design, Construction and Use

Course Coordinator: Dr. Sugandha V. Khangar

Course modules:

Course Modules:

1. **Introduction to Dobsonian Telescopes**

   - History and evolution of the Dobsonian telescope
   - Advantages and disadvantages compared to other telescope designs
   - Importance of the Dobsonian mount in achieving stability and ease of use

2. **Optics and Mechanics of Dobsonian Telescopes**

   - Optical components: primary and secondary mirrors, focuser, and eyepiece
   - Optical design considerations: aperture, focal length, and focal ratio
   - Mechanical structure: truss tube or solid tube, materials, and weight distribution

3. **Design and Construction of Dobsonian Telescopes**

   - Planning and designing a Dobsonian telescope: choosing the right specifications
   - Construction materials and tools required for building the telescope
   - Step-by-step assembly instructions for building a basic Dobsonian telescope

4. **Collimation and Maintenance**

   - Understanding collimation: aligning the optics for optimal performance

- Tools and techniques for collimating a Dobsonian telescope
- Routine maintenance to keep the telescope in good condition

5. **Observing Techniques and Sky Navigation**

- Introduction to observational astronomy: stars, planets, nebulae, and galaxies
- Sky navigation techniques: using star charts, digital apps, and celestial coordinates
- Tips for observing different celestial objects with a Dobsonian telescope

6. **Advanced Topics in Dobsonian Telescopes**

- Upgrading and customizing a basic Dobsonian telescope
- Astrophotography with a Dobsonian telescope: techniques and challenges
- Remote observing and digital control systems for Dobsonian telescopes

7. **Field Trips and Observational Sessions**

- Hands-on field trips to observe the night sky with Dobsonian telescopes
- Practical sessions on setting up and using Dobsonian telescopes in various observing conditions
- Guided observations of celestial objects and phenomena

8. **Safety and Ethics in Amateur Astronomy**

- Safety considerations when observing the night sky: eye protection, equipment handling, and site selection
- Ethics of amateur astronomy: light pollution awareness, environmental impact, and responsible observing practices

Course Objectives:

1. **Understanding Dobsonian Telescope Basics**:

- Gain a comprehensive understanding of the history, design principles, and advantages of Dobsonian telescopes compared to other telescope designs.

2. **Optical and Mechanical Components**:

- Learn about the optical components (primary and secondary mirrors, focuser, eyepiece) and mechanical structure (truss tube or solid tube) of Dobsonian telescopes.

3. **Design and Construction Skills**:

- Acquire the knowledge and skills necessary to plan, design, and construct a Dobsonian telescope, including selecting appropriate specifications and materials.

4. **Collimation and Maintenance**:

- Understand the importance of collimation for optimal telescope performance and learn how to collimate a Dobsonian telescope effectively.
- Learn routine maintenance procedures to keep the telescope in good working condition.

5. **Observational Techniques**:

- Develop observational skills and techniques for navigating the night sky using star charts, digital apps, and celestial coordinates.
- Learn how to observe various celestial objects, including stars, planets, nebulae, and galaxies, with a Dobsonian telescope.

6. **Advanced Topics**:

- Explore advanced topics such as upgrading and customizing Dobsonian telescopes, astrophotography techniques, and remote observing options.

7. **Safety and Ethics**:

- Understand safety considerations when observing the night sky, including eye protection and equipment handling.
- Learn about the ethical aspects of amateur astronomy, including light pollution awareness and responsible observing practices.

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

Evaluation Strategies: Oral discussions and Final MCQ examination.

Course Outcomes (COs):

1. **Comprehensive Understanding of Dobsonian Telescopes**:

- Participants will have a thorough understanding of Dobsonian telescope technology, including its optical and mechanical components, design principles, and historical significance.

2. **Proficiency in Telescope Design and Construction**:

- Participants will gain practical skills in planning, designing, and constructing a Dobsonian telescope, enabling them to build their own telescopes or make informed decisions when purchasing one.

3. **Effective Observational Skills**:

- Participants will develop effective observational skills and techniques for navigating the night sky and observing various celestial objects with a Dobsonian telescope.

4. **Ability to Maintain and Collimate Telescopes**:

- Participants will be able to perform routine maintenance procedures and collimation on Dobsonian telescopes to ensure optimal performance.

5. **Exploration of Advanced Topics**:

- Participants will explore advanced topics in Dobsonian telescope technology, such as upgrades, astrophotography, and remote observing, expanding their knowledge and capabilities in amateur astronomy.

6. **Adherence to Safety and Ethical Standards**:

- Participants will understand and adhere to safety protocols when observing the night sky and demonstrate ethical behavior in their amateur astronomy activities.

Duration of course: Ten weeks (30 Hours)

Target Audience:

- UG students those who are interested in building and using telescope
- Astronomy enthusiasts looking to deepen their understanding of Dobsonian telescope technology and observational techniques.

Prerequisite

- Basic knowledge of astronomy and telescopes
- observational ideas

Certification:

Participants who successfully complete the course requirements, including attendance, *MCQ type* exam, and a final observational events (practical exam), will receive a certificate of completion in Dobsonian telescope design, construction, and use.

The Structure of Syllabus and system of evaluation -

Course	Theory Papers and Practical	Total Marks	
		Theory	Project/ Practical
Certificate Course on Dobsonian Telescope: Design, Construction and Use	Theory paper- Certificate Course on Dobsonian Telescope: Design, Construction and Use: Theory examination will be of MCQ pattern having 60 questions each with equal marks.	60	40
	* Practical examination will be based on performance sky observation (hands on)	100	

Coordinator

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

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

SYLLABUS

Certificate course (10 weeks)

(Certificate Course on Dobsonian Telescope: Design, Construction and Use)

Theory

UNIT- I

Introduction to Dobsonian Telescopes: History and evolution of the Dobsonian telescope, Advantages and disadvantages compared to other telescope designs, Importance of the Dobsonian mount in achieving stability and ease of use

Optics and Mechanics of Dobsonian Telescopes: Optical components: primary and secondary mirrors, focuser, and eyepiece, Optical design considerations: aperture, focal length, and focal ratio, Mechanical structure: truss tube or solid tube, materials, and weight distribution

Unit-II

Design and Construction of Dobsonian Telescopes: Planning and designing a Dobsonian telescope: choosing the right specifications, Construction materials and tools required for building the telescope, Step-by-step assembly instructions for building a basic Dobsonian telescope. **Collimation and Maintenance:** Understanding collimation: aligning the optics for optimal performance, Tools and techniques for collimating a Dobsonian telescope, Routine maintenance to keep the telescope in good condition.

Unit III

Observing Techniques and Sky Navigation: Introduction to observational astronomy: stars, planets, nebulae, and galaxies, Sky navigation techniques: using star charts, digital apps, and celestial coordinates, Tips for observing different celestial objects with a Dobsonian telescope

Advanced Topics in Dobsonian Telescopes: Upgrading and customizing a basic Dobsonian telescope, Astrophotography with a Dobsonian telescope: techniques and challenges, Remote observing and digital control systems for Dobsonian telescopes

Unit IV:

Field Trips and Observational Sessions: Hands-on field trips to observe the night sky with Dobsonian telescopes, Practical sessions on setting up and using Dobsonian telescopes in various observing conditions, Guided observations of celestial objects and phenomena.

Safety and Ethics in Amateur Astronomy: Safety considerations when observing the night sky: eye protection, equipment handling, and site selection, Ethics of amateur astronomy: light pollution awareness, environmental impact, and responsible observing practices

Course Coordinator
(Dr. S.N. Khangar)

Practical / Project Work and Assessment

- Hands-on practical work on sky observing events and their attendance
- 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	History and evolution of the Dobsonian telescope, Advantages and disadvantages compared to other telescope designs Importance of the Dobsonian mount in achieving stability and ease of use Practical on observatory field visit
Week 2	3	Optical components: primary and secondary mirrors, focuser, and eyepiece, Optical design considerations: aperture, focal length, and focal ratio, Mechanical structure: truss tube or solid tube, materials, and weight distribution Practical on setting Dobsonian telescope
Week 3	3	Planning and designing a Dobsonian telescope: choosing the right specifications, Construction materials and tools required for building the telescope, Step-by-step assembly instructions for building a basic Dobsonian telescope.
Week 4	3	Understanding collimation: aligning the optics for optimal performance, Tools and techniques for collimating a Dobsonian telescope, Routine maintenance to keep the telescope in good condition. Practical sky observation and group discussion
Week 5	3	Introduction to observational astronomy: stars, planets, nebulae, and galaxies, Sky navigation techniques: using star charts, digital apps, and

		celestial coordinates, Tips for observing different celestial objects with a Dobsonian telescope Practical sky observation and group dicussion
Week 6	3	Upgrading and customizing a basic Dobsonian telescope, Astrophotography with a Dobsonian telescope: techniques and challenges, Remote observing and digital control systems for Dobsonian telescopes Practical: sky observation and Group discussion
Week 7	3	Hands-on field trips to observe the night sky with Dobsonian telescopes, Practical sessions on setting up and using Dobsonian telescopes in various observing conditions, Guided observations of celestial objects and phenomena. Practical: sky observation and Group discussion
Week 8	3	Safety considerations when observing the night sky: eye protection, equipment handling, and site selection, Ethics of amateur astronomy: light pollution awareness, environmental impact, and responsible observing practices. Practical: sky observation and Group discussion
Week 9	3	Safety considerations when observing the night sky: eye protection, equipment handling, and site selection, Ethics of amateur astronomy: light pollution awareness, environmental impact, and responsible observing practices
Week 10	3	Question answer solving session & Practical Group discussion

SSES AMT'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR-12
(Certificate Course on Dobsonian Telescope: Design, Construction and Use)

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	SVK and staff members practical, 6:30 PM – 7:30 PM	C-Block open Terrace

Date of MCQ type final Exam: 25/10/2022

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Course Coordinator

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

Certificate course

Title: "Certificate Course on Dobsonian Telescope: Design, Construction and Use"

Registration Sheet-2022-2023

Course Coordinator: Dr. S. V. Khangar

Sr. No.	Name of Students	Sign
1	NITNAWAARE AACHAL DINESH	
2	BHASMOTE AARADHANA RAJENDRA	
3	KANGALE ACHAL RUSHI	
4	MENDWADE AISHWARYA PRAKASH	AT
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	WAHANE TEJASVI PRAVIN	
52	KUBADDE TEJASWI MOTIRAM	
53	JANGLE VAISHNAVI ROSHAN	
54	CHAVHAN VAISHNAVI SAHEBRAO	

55	PAL VAISHNAVI VINOD	
56	CHARUTKAR VANSH PRAMOD	
57	KOWASI AJIT RAJU	
58	CHAKRE ANIKET SANJEEV	
59	NAMDEO ARYAN UMASHANKAR	
60	SONWANE BHAGYASHREE CHANDRAKUMAR	
61	KHARBIKAR DEVESH RAJU	
62	HEDAOO DHIRAJ RAJENDRA	
63	VYAS HIMANSHU MUKESH	
64	ARVIWALA HUZEFA KHUZEMA	
65	BARSAGADE KAILASH SUDHAKAR	
66	BAHORIYA KARAN NARESH	
67	GUPTA KSHITIJ ADITYASHEKHAR	
68	PAIGAMI MANISH RAJENDRA	
69	VISHWAKARMA MANISH SUDARSHAN	
70	KHOTELE MAYANK HEMANTKUMAR	
71	MASKHARE MAYUR PRASHANT	
72	KAMBLE NAYAN ASHOK	
73	KANOJIYA PIYUSH RAJESH	
74	DHOK SOKSHAM NISHANT	
75	GAIDHANE SMITA PURUSHOTTAM	
76	BALODIYA RITIKA VISHNU	
77	BHAGAT KRUNAL GAJANAN	
78	BHAGAT SANJIVANI SAGAR	
79	BHENDE VIPLAV SANJAY	
80	BILKAR AMISHA SITARAM	

Course Coordinator
Dr. S. V. Khangar

Attendance Sheet

Certificate Course

Dobsonian Telescope: Design, Construction and Use

Course Duration: 16/08/2022-22/10/2022

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		
			T	T	P	T	T	P	T	T	P	T	T	P	T	T	P	T	T	P	T	T	P	T	T	P	T	T	P	T	T	P
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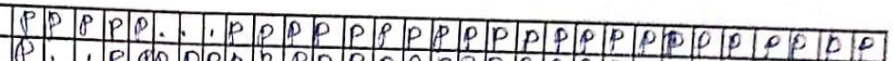
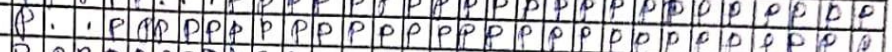
24	Ku	TUPAT MAYURI RAJESH	
25	Ku	GOUTIYA MUSKAN JAGDISH	
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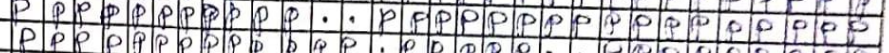
27	Ku	SAPATE PORNIMA PRABHU	
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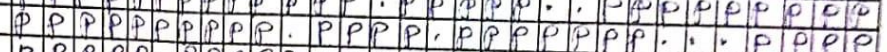
29	Ku	FULKUWAR PRIYA SANTOSH	
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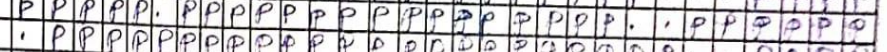
31	Ku	SONTAKKE RAJVEE SAROJ	
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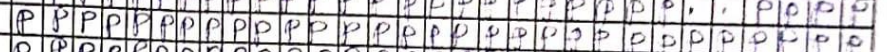
33	Ku	BAGHEL RIYA KISHOR	
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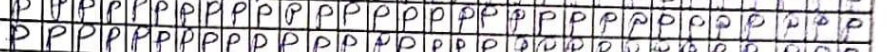
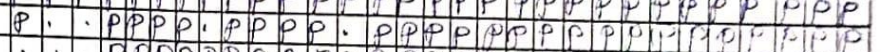
35	Ku	DHORE SADICHCHHA DILIP	
36	Ku	BHUJADE SAKSHI BABLU	
37	Ku	NIMBADE SHAKSHI PRAKASH	
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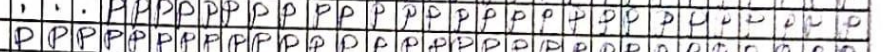
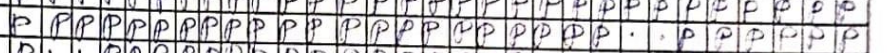
39	Ku	CHAUDHARY SHRUTI MAHARAJSINGH	
40	Ku	JAMBHULKAR SHRUTI MAHENDRA	
41	Ku	BAGHEL SONAM SANTOSHKUMAR	
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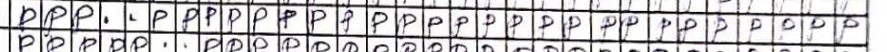
43	Ku	LUTE SUHANI RAMESHWAR	
44	Ku	THAKARE SUHANI SUKHADEO	
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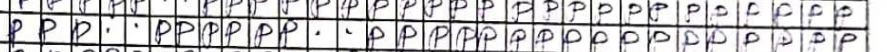
46	Ku	GAJBHIYE SWEJAL PRASHANT	
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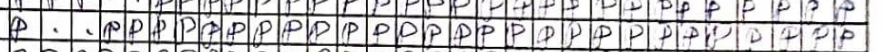
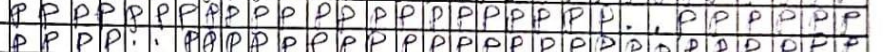
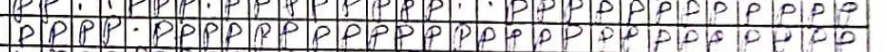
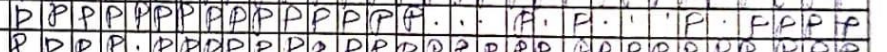
48	Ku	CHANNE TANISHKA PRAVEEN	
49	Ku	TOMAR TANU ALEXNDER KUMAR	
50	Ku	BAIG TASMIYA HAMID	
51	Ku	WAHANE TEJASVI PRAVIN	
52	Ku	KUBADDE TEJASWI MOTIRAM	
53	Ku	JANGLE VAISHNAVI ROSHAN	
54	Ku	CHAVHAN VAISHNAVI SAHEBRAO	
55	Ku	PAL VAISHNAVI VINOD	
56	Mr.	CHARUTKAR VANSH PRAMOD	
57	Mr.	KOWASI AJIT RAJU	

58	Mr.	CHAKRE ANIKET SANJEEV	
59	Mr.	NAMDEO ARYAN UMASHANKAR	
60	Ku	SONWANE BHAGYASHREE CHANDRAKUMAR	
61	Mr.	KHARBIKAR DEVESH RAJU	
62	Mr.	HEDAOO DHIRAJ RAJENDRA	
63	Mr.	VYAS HIMANSHU MUKESH	
64	Mr.	ARVIWALA HUZEFA KHUZEMA	
65	Mr.	BARSAGADE KALASH SUDHAKAR	
66	Mr.	BAHORIYA KARAN NARESH	
67	Mr.	GUPTA KSHITIJ ADITYASHEKHAR	
68	Mr.	PAIGAMI MANISH RAJENDRA	
69	Mr.	VISHWAKARMA MANISH SUDARSHAN	
70	Mr.	KHOTELE MAYANK HEMANTKUMAR	
71	Mr.	MASKHARE MAYUR PRASHANT	
72	Mr.	KAMBLE NAYAN ASHOK	
73	Mr.	KANOJIYA PIYUSH RAJESH	
74	Ku	DHOK SOKSHAM NISHANT	
75	Ku	GAIDHANE SMITA PURUSHOTTAM	
76	Ku	BALODIYA RITIKA VISHNU	
77	Mr	BHAGAT KRUNAL GAJANAN	
78	Ku	BHAGAT SANJIVANI SAGAR	
79	Mr	BHENDE VIPLAV SANJAY	
80	Ku	BILKAR AMISHA SITARAM	
Sign of Teacher			

Dr. S. V. Khapre
Course Coordinator

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Department of Physics

Add-on Certificate Course (2022-2023)

Certificate Course: Dobsonian Telescope: Design, Construction and Use

NOTICE
(For UG)

Date: 21/10/2022

All the registered students for certificate course on **"Dobsonian Telescope: Design, Construction and Use"** are hereby informed that their Final exam is held on 25/10/2022 **at 11: 00 am sharp.**

Note:
Question paper will be of 60 Marks
Time for this paper is 1 hour
Each question carry 2 Marks
For any query contact to course coordinator.
Room No. C6

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 Dobsonian Telescope: Design, Construction and Use"

Theory Examination Attendance Sheet-2022-2023

Course Coordinator: Dr. S. V. Khangar

Date: 25/10/2022

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	
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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	
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30	ADHAU PURVA PRAMOD	
31	SONTAKKE RAJVEE SAROJ	
32	VARMA RIYA JITENDRA	
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34	WASNIK RUTIKA VINAYAK	
35	DHORE SADICHCHHA DILIP	
36	BHUJADE SAKSHI BABLU	
37	NIMBADE SHAKSHI PRAKASH	
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64	ARVIWALA HUZEFA KHUZEMA	
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71	MASKHARE MAYUR PRASHANT	
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79	BHENDE VIPLAV SANJAY	
80	BILKAR AMISHA SITARAM	

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 Dobsonian Telescope: Design, Construction and Use

THEORY EXAM

Date: 25/10/2022 **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 is the primary feature that distinguishes a Dobsonian telescope from other designs? A) Computerized tracking

B) Lightweight materials

C) Altitude-azimuth mount

D) Refractor optics

2. What is the approximate focal ratio typically associated with a Dobsonian telescope?

A) f/5 to f/8

B) f/15 to f/20

C) f/2 to f/3

D) f/10 to f/12

3. Which component of a Dobsonian telescope is responsible for supporting the primary mirror?

A) Equatorial mount

B) Altitude bearing

C) Spider vane

D) Dobsonian base

4. What is the purpose of a Dobsonian telescope's "rocker box"?

A) To house the eyepiece

B) To provide a stable platform for the telescope

C) To control the telescope's tracking

D) To support the secondary mirror

5. Which of the following is a benefit of a Dobsonian telescope's simplicity in design?

A) Greater portability

B) Higher magnification

C) Improved resolution

D) Automated alignment

6. What is the main disadvantage of Dobsonian telescopes compared to other designs?

A) Limited aperture

B) Heavy weight

C) Complexity of use

D) Limited field of view

7. What type of mirror is typically used as the primary mirror in a Dobsonian telescope?

A) Convex mirror

B) Parabolic mirror

C) Spherical mirror

D) Concave mirror

8. Which adjustment allows the user to point the Dobsonian telescope at different objects in the sky?

A) Collimation

B) Focuser

C) Altitude adjustment

D) Eyepiece rotation

9. What is the function of the "finder scope" on a Dobsonian telescope?

A) To magnify the image for detailed viewing

B) To provide a wide field of view

C) To assist in locating celestial objects

D) To stabilize the telescope during observation

10. Which of the following accessories is commonly used with a Dobsonian telescope for astrophotography?

A) Equatorial wedge

B) Autoguider

C) Barlow lens

D) Star diagonal

11.What is a defining characteristic of a Dobsonian telescope?

A) Equatorial mount

B) Alt-azimuth mount

C) Refractor design

D) Catadioptric design

12.Which of the following is an advantage of Dobsonian telescopes?

A) High portability

B) Suitable for astrophotography

C) Expensive to build

D) Large aperture

13.What is the primary function of the focuser in a Dobsonian telescope?

A) Collecting light

B) Adjusting magnification

C) Supporting the primary mirror

D) Mounting the eyepiece

14. Which material is commonly used for the primary mirror of a Dobsonian telescope?

A) Aluminum

B) Plastic

C) Glass

D) Copper

15. What is the purpose of collimation in a Dobsonian telescope?

A) Focusing the telescope

B) Aligning the optics

C) Balancing the mount

D) Adjusting the eyepiece

16.How can you align the finder scope with the main optics in a Dobsonian telescope?

A) Using a laser pointer

B) Aligning it with a bright star

C) Adjusting the focuser

D) Using a compass

17.What is the recommended technique for observing celestial objects with a Dobsonian telescope?

A) High magnification for faint objects

B) Low magnification for wide-field views

C) Observing during daylight hours

D) Using a small aperture

18. Which of the following can be observed using a Dobsonian telescope?

A) Microorganisms

B) Deep-sky objects

C) Subatomic particles

D) Radio waves

19. What role do Dobsonian telescopes play in amateur astronomy?

A) Observing satellites

B) Conducting space missions

C) Public outreach and education

D) Discovering exoplanets

20.What type of celestial objects can be observed using a Dobsonian telescope?

A) Only planets B) Only stars C) Only galaxies D) Planets, stars, galaxies, and nebulae

21.Which celestial object is best observed with high magnification?

A) Galaxies B) Planets C) Stars D) Nebulae

22.What is the recommended technique for finding celestial objects in the sky with a Dobsonian telescope?

A) Using a compass B) Observing during daylight hours C) Star-hopping D) Using a laser pointer

23.How should you adjust the focus when observing celestial objects with a Dobsonian telescope?

A) Quickly switch between high and low magnification

B) Slowly adjust the focus until the object appears sharp

C) Use only the highest magnification available

D) Keep the focus fixed at all times

24.What is the effect of light pollution on sky observation with a Dobsonian telescope?

A) Improves visibility of faint objects

B) Reduces visibility of faint objects

C) Has no effect on visibility

D) Enhances contrast of celestial objects

25.When is the best time for sky observation with a Dobsonian telescope?

A) During a full moon

B) During daylight hours

C) On clear, moonless nights

D) During heavy rain or snowfall

26.What is the purpose of collimation in a Dobsonian telescope?

A) Adjusting the focus B) Aligning the optics C) Balancing the telescope D) Cleaning the mirrors

27.How should you store a Dobsonian telescope when not in use?

A) Leave it outdoors exposed to the elements

B) Store it in a damp environment

C) Cover it with a dust cap and store it indoors

D) Disassemble it and store the parts separately

28.What effect does light pollution have on sky observation with a Dobsonian telescope?

A) Improves visibility of faint objects

B) Reduces visibility of faint objects

C) Has no effect on visibility

D) Enhances contrast of celestial objects

29.Which type of sky conditions is most conducive for observing celestial objects with minimal interference from light pollution?

A) Urban skies B) Suburban skies C) Rural skies D) Industrial skies

30.What is the primary impact of atmospheric turbulence on sky observation?

A) Increased clarity of celestial objects

B) Decreased visibility of celestial objects

C) Improved contrast of celestial objects

D) Enhanced color saturation of celestial objects

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Shri Shivaji Education Society Amravati's

Science College, Congress Nagar Nagpur

Department of Physics

2022-2023

Add-on course Examination

Title: Certificate Course on Dobsonian Telescope: Design, Construction and Use

Course Coordinator: Dr. Sugandha Khangar

DATE: 7/11/2022

Total Marks: 100

STATEMENT OF MARKS

Sr. No.	Name of Students	Theory Marks (60M)	Practical Marks (40M)	Total (100M)	Grade
1	NITNAWAARE AACHAL DINESH	56	34	90	A+
2	BHASMOTE AARADHANA RAJENDRA	46	38	84	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	44	30	74	B+
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	BAIG TASMIYA HAMID	58	32	90	A+

52	WAHANE TEJASVI PRAVIN	50	38	88	A+
53	KUBADDE TEJASWI MOTIRAM	54	28	82	A
54	JANGLE VAISHNAVI ROSHAN	58	38	96	A+
55	CHAVHAN VAISHNAVI SAHEBRAO	50	34	84	A
56	PAL VAISHNAVI VINOD	52	30	82	A
57	CHARUTKAR VANSH PRAMOD	50	31	81	A
58	KOWASI AJIT RAJU	58	38	96	A+
59	CHAKRE ANIKET SANJEEV	46	38	84	A
60	NAMDEO ARYAN UMASHANKAR	52	38	90	A+
61	SONWANE BHAGYASHREE CHANDRAKUMAR	54	39	93	A+
62	KHARBIKAR DEVESH RAJU	56	30	86	A
63	HEDAOO DHIRAJ RAJENDRA	54	40	94	A+
64	VYAS HIMANSHU MUKESH	52	38	90	A+
65	ARVIWALA HUZEFA KHUZEMA	54	30	84	A
66	BARSAGADE KALASH SUDHAKAR	50	36	86	A+
67	BAHORIYA KARAN NARESH	52	30	82	A
68	GUPTA KSHITIJ ADITYASHEKHAR	52	38	90	A+
69	PAIGAMI MANISH RAJENDRA	44	30	74	B
70	VISHWAKARMA MANISH SUDARSHAN	50	38	88	A
71	KHOTELE MAYANK HEMANTKUMAR	58	36	94	A+
72	MASKHARE MAYUR PRASHANT	50	39	89	A
73	KAMBLE NAYAN ASHOK	60	30	80	A
74	KANOJIYA PIYUSH RAJESH	60	34	94	A+
75	DHOK SOKSHAM NISHANT	54	30	84	A
76	GAIDHANE SMITA PURUSHOTTAM	58	34	92	A+
77	BALODIYA RITIKA VISHNU	58	30	88	A
78	BHAGAT KRUNAL GAJANAN	54	36	90	A+
79	BHAGAT SANJIVANI SAGAR	58	38	96	A+
80	BILKAR AMISHA SITARAM	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

Accredited with CGPA of 3.51 at 'A+' 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 'PARAMARSH Scheme', UGC, New Delhi

Add-on Course

Course Exam Name: Certificate Course on Dobsonian Telescope: Design, Construction and Use

Name of Student: Model Answer Key

Roll No.: | | | |

Session: 2022-23

Test Date: 25/10/2022

Max. Marks: 60

Invigilator Signature

Obtained Marks:

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

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

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

Solved Answer Key

Shri Shivaji Education Society, Amravati's

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

Add-on Course

Course Exam Name: Certificate Course on Dobsonian Telescope: Design, Construction and Use

Name of Student: Aachal D. Nitnaware

Roll No.: 0 0 1 **Session: 2022-23**

Test Date: 25/10/2022 **Max. Marks: 60**

Invigilator Signature **Obtained Marks:** 56

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

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

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

Shri Shivaji Education Society Amravati's

SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

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CERTIFICATE

Mr./Ku. Aishwarya P. Mendhe is awarded with certificate on successful completion of the course entitled, Certificate course in **"Dobsorian Telescope: Design, Construction and Use".**

Session 2022-23 under Add-on course conducted for **30 hours from 16/08/2022 to 22/10/2022** 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, Nag

Shri Shivaji Education Society Amaravati's

Science College Congress Nagar, Nagpur

Department of Physics

Course Feedback on Add-on Course

Dobsonian Telescope: Design, Construction and Use

Undergraduate Course for Physics Students

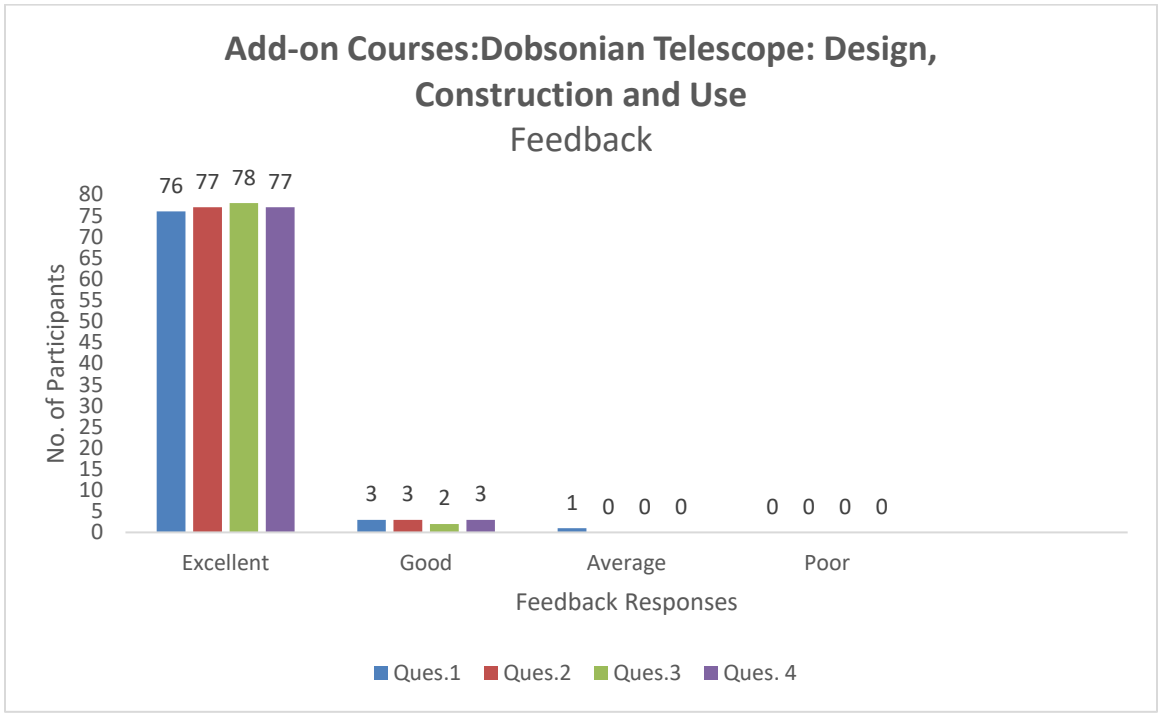
Duration: ***16/08/2022 to 22/10/2022***

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
Coordinator, IQAC
Science College,
Congress Nagar, Nagpur

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

SEAL
Science College, Congress Nagar, Nagpur