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 2 Jan 2023 to 20 March 2023

Course Coordinator: Dr. S. V. Khangar

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 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: 2/01/2023 to 20/03/2023

Total Students: 50

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 50 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

Action Taken: To understand the **Dobsonian Telescope: Design, Construction and Use** department of physics conducted the add-on course. Total 50 students registered for this course. Students participated actively in this course tried to understand about Dobsonian telescope.

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:7/12/2022

All the B. Sc. First year, Second Year and Final Year students of the department of Physics are hereby informed that the Physics Department re-commencing a certificate course on **"Dobsonian Telescope: Design, Construction and Use"** from **2/01/2023 to 20/03/2023. For this course registration will start from 10/12/2022 to 1/01/2023. Interested students contact to course coordinator for registration.**

Note: No registration fees for this course

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: 30/12/2022

All the registered students of the department of Physics are hereby informed that the department of Physics re-commencing a certificate course on "**Dobsonian Telescope: Design, Construction and Use**" from **2/01/2023 to 20/03/2023.** 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

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

Certificate Course on Dobsonian Telescope: Design, Construction and Use

Free Certificate Course for College Students
Duration: 30 Hours (10 Weeks)
Course Duration: 2/01/2023 to 20/03/2023
Frequency: Weekly sessions (2-3hours each) including field trips and observational sessions
Process of Registration: Early birds will be admitted first
Registration Date: 10/12/2022-1/01/2023
Exam:8/04/2023

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: 1/01/2023
Course Coordinator: Dr. Sugandha V. Khangar **Contact: 9975768840**

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)

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 and whole staff practical, 6:30 PM – 7:30 PM

Course Coordinator **Principal**

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
1	SANGOLE AKANSHA SUBHASH
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	CHOUDHARY 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 SUBHASH
19	KHAPRE MUSKAN PRAKASH
20	SHARMA SNEHA RANJAYKUMAR
21	GANVIR ISHITA HEMANT
22	KARKI SRUSHTI SUBHASH
23	MEENA RUCHI MAHENDRA

24	BANSOD NIKHIL MILIND
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

Course Coordinator
Dr. S. V. Khangar

Attendance Sheet

Certificate Course

Dobsonian Telescope: Design, Construction and Use

Course Duration: 2/01/2023-20/03/2023

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
			6	7	7	13	14	14	20	21	21	27	28	28	3	4	4	10	11	11	17	18	18	24	25	25	3	4	4	10	11	11	17	18	18
			01	01	01	01	01	01	01	01	01	01	01	01	02	02	02	02	02	02	02	02	02	02	02	02	03	03	03	03	03	03	03	03	03
1	Ku	SANGOLE AKANSHA SUBHASH	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	.	.	P
2	Ku	MARBATE SANSKRUTI 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	P	P	.	.	P
3	Ku	YADAV SAPNA JAIKRISHNA	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	.	.	P
4	Ku	CHAUDHARY MUNESH RAVINDRASINGH	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	.	.	P
5	Ku	SHENDE CHAITRALI GANESHRAO	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	.	.	P
6	Ku	BAGDE SAKSHI SATISH	.	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
7	Ku	BAGDE SHRADDHA BABAN	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	.	.	.	.	.	.	.	.	P
8	Ku	SINGH NEHA DARA	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	PARSHURAMKAR GAURAV MANOHAR	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
10	Ku	DHABEKAR SWATI FATTU	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	CHOUDHARY DHANSHREE NARENDRA	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	PAUNIKAR YASHWANT 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	.	.	.	.	.	P
13	Ku	AGARKAR PRANJAL VIJAY	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
14	Ku	LAKHE PRANAV BHUPESH	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	MOTWANI VARUN DOLAT	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
16	Ku	JANGADE SANJANA SADANAND	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
17	Ku	NAYAB NIDHI ARVIND	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
18	Ku	KENE JANVI SUBHASH	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	P
19	Ku	KHAPRE MUSKAN 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	P
20	Ku	SHARMA SNEHA RANJAYKUMAR	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	GANVIR ISHITA HEMANT	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	P
22	Ku	KARKI SRUSHTI SUBHASH	.	.	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	MEENA RUCHI MAHENDRA	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	P	P	P
24	Ku	BEDEKAR TUSHAR VAIBHAV	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	P	P	P
25	Ku	DHAKATE SAKSHI 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	P	P	P
26	Ku	PANTAWANE SHREYA SANJAY	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	P	P	P
27	Ku	BHAGAT SANJIVANI SAGAR	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	LAKDE SHREYASH MAHADEO	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	P	P	P
29	Ku	RAUT DISHA VIJAY	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	P	P	P
30	Ku	LODHIKAR ANJALI NANESHWAR	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	P
31	Ku	BALAPURE PARI GAJANAN	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	P	P	P
32	Ku	BHIWGADE SHRINAY YOGESH	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	P	P
33	Ku	PATLE DEVESH DHURVAJI	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
34	Ku	KAWALE GAYATRI VINOD	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
35	Ku	PAROCHE PALAK SATISH	.	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	JOSHI SANCHIT MADHUSUDAN	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	P	P
37	Ku	SHINDE NILESH SUNIL	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	P
38	Ku	KAYARKAR JANHVI DHIRENDRA	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
39	Ku	JOSHI ARTI SUBHASH	.	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	PATEL LOKESH SHRINIWAS	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	P	P	P
41	Ku	MASRAM NIKITA SITARAM	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	P	P	P
42	Ku	MESHRAM NISHANT DUSHYANT	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	P
43	Ku	NANNAWARE SAKSHI MURLIDHAR	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	MISHRA MAHEK 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	P
45	Ku	PATRICK SUMIT PASKAL	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
46	Ku	ZADE GAURI MUKESH	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	P
47	Ku	CHANDANKHEDE RACHANA VINESH	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	P	P
48	Ku	KANOJE KHUSHI SANJAY	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
49	Ku	JADHAV AASTHA SANJU	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
50	Ku	BHAGAT KRUNAL GAJANAN	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
		Sign of Teacher																																	

(Dr. S. 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: 20/03/2023

All the registered students for certificate course on **"Dobsonian Telescope: Design, Construction and Use"** are hereby informed that their Final exam is held on **08/04/2023 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.

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: 08/04/2023

Sr. No.	Name of Students	Sign
1	SANGOLE AKANSHA SUBHASH	
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	CHOUDHARY 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 SUBHASH	
19	KHAPRE MUSKAN PRAKASH	
20	SHARMA SNEHA RANJAYKUMAR	
21	GANVIR ISHITA HEMANT	
22	KARKI SRUSHTI SUBHASH	

23	MEENA RUCHI MAHENDRA	
24	BANSOD NIKHIL MILIND	
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	

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: 08/04/2023 **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: 15/05/2023 **Total Marks: 100**

STATEMENT OF MARKS

Sr. No.	Name of Students	Theory Marks (60M)	Practical Marks (40M)	Total (100M)	Grade
1	SANGOLE AKANSHA SUBHASH	58	34	92	A+
2	MARBATE SANSKRUTI RAJENDRA	48	38	86	A
3	YADAV SAPNA JAIKRISHNA	52	38	90	A+
4	CHAUDHARY MUNESH RAVINDRASINGH	56	38	94	A+
5	SHENDE CHAITRALI GANESHRAO	52	39	91	A+
6	BAGDE SAKSHI SATISH	56	38	94	A+
7	BAGDE SHRADDHA BABAN	58	31	89	A
8	SINGH NEHA DARA	40	35	75	A
9	PARSHURAMKAR GAURAV MANOHAR	50	39	89	A
10	DHABEKAR SWATI FATTU	46	35	81	A
11	CHOUDHARY DHANSHREE NARENDRA	52	38	90	A+
12	PAUNIKAR YASHWANT RAJU	44	34	78	A
13	AGARKAR PRANJAL VIJAY	58	34	92	A+
14	LAKHE PRANAV BHUPESH	56	36	92	A+
15	MOTWANI VARUN DOLAT	44	30	74	B+
16	JANGADE SANJANA SADANAND	58	30	88	A
17	NAYAB NIDHI ARVIND	44	30	74	B+
18	KENE JANVI SUBHASH	56	38	94	A+
19	KHAPRE MUSKAN PRAKASH	54	30	84	A
20	SHARMA SNEHA RANJAYKUMAR	56	34	90	A+
21	GANVIR ISHITA HEMANT	58	36	94	A+
22	KARKI SRUSHTI SUBHASH	60	32	82	A

23	MEENA RUCHI MAHENDRA	58	30	78	A
25	BANSOD NIKHIL MILIND	58	32	90	A+
26	DHAKATE SAKSHI PRAMOD	54	38	92	A+
27	PANTAWANE SHREYA SANJAY	52	38	90	A+
28	BHAGAT SANJIVANI SAGAR	54	32	86	A
29	LAKDE SHREYASH MAHADEO	58	30	88	A
30	RAUT DISHA VIJAY	42	38	80	A
31	LODHIKAR ANJALI NANESHWAR	52	38	90	A+
32	BALAPURE PARI GAJANAN	56	40	96	A+
33	BHIWGADE SHRINAY YOGESH	58	40	98	A+
34	PATLE DEVESH DHURVAJI	50	32	82	A
35	KAWALE GAYATRI VINOD	54	28	82	A
36	PAROCHE PALAK SATISH	50	36	86	A
37	JOSHI SANCHIT MADHUSUDAN	48	36	84	A
38	SHINDE NILESH SUNIL	44	38	82	A
39	KAYARKAR JANHVI DHIRENDRA	50	36	86	A
40	JOSHI ARTI SUBHASH	50	38	88	A
41	PATEL LOKESH SHRINIWAS	60	30	90	A+
42	MASRAM NIKITA SITARAM	52	40	92	A+
43	MESHRAM NISHANT DUSHYANT	54	40	94	A+
44	NANNAWARE SAKSHI MURLIDHAR	42	38	80	A
45	MISHRA MAHEK PRAMOD	58	30	88	A+
46	PATRICK SUMIT PASKAL	52	38	90	A+
47	ZADE GAURI MUKESH	58	36	94	A+
48	CHANDANKHEDE RACHANA VINESH	54	36	90	A+
49	KANOJE KHUSHI SANJAY	52	30	82	A
50	JADHAV AASTHA SANJU	50	30	80	A

Dr. Sugandha V. Khangar
Course Coordinator
Department of Physics

Shri Shivaji Education Society, Amravati's

SCIENCE COLLEGE

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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: Akansha S. Sangale

Roll No.: 001 **Session: 2022-23**

Test Date: 8/04/2023 **Max. Marks:** 60

Invigilator Signature **Obtained Marks:** 58

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	○	○	○	○
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43	○	○	○	○
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48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

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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: Munesh R. Chauhan

Roll No.: 004 **Session: 2022-23**

Test Date: 8/04/2023 **Max. Marks:** 60

Invigilator Signature **Obtained Marks:** 56

INSTRUCTIONS FOR FILLING THE SHEET
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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	○	○	○	○

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CERTIFICATE

Mr./Ku. ***Akansha S. Sangole*** is awarded with certificate on successful completion of the course entitled, Certificate Course in **"Dobsonian Telescope: Design, Construction and Use".**

Session 2022-23 under Add-on course conducted for **30 hours from 2/01/2023-20/03/2023** 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
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Department of Physics

Course Feedback on Add-on Course

Dobsonian Telescope: Design, Construction and Use

Undergraduate Course for Physics Students

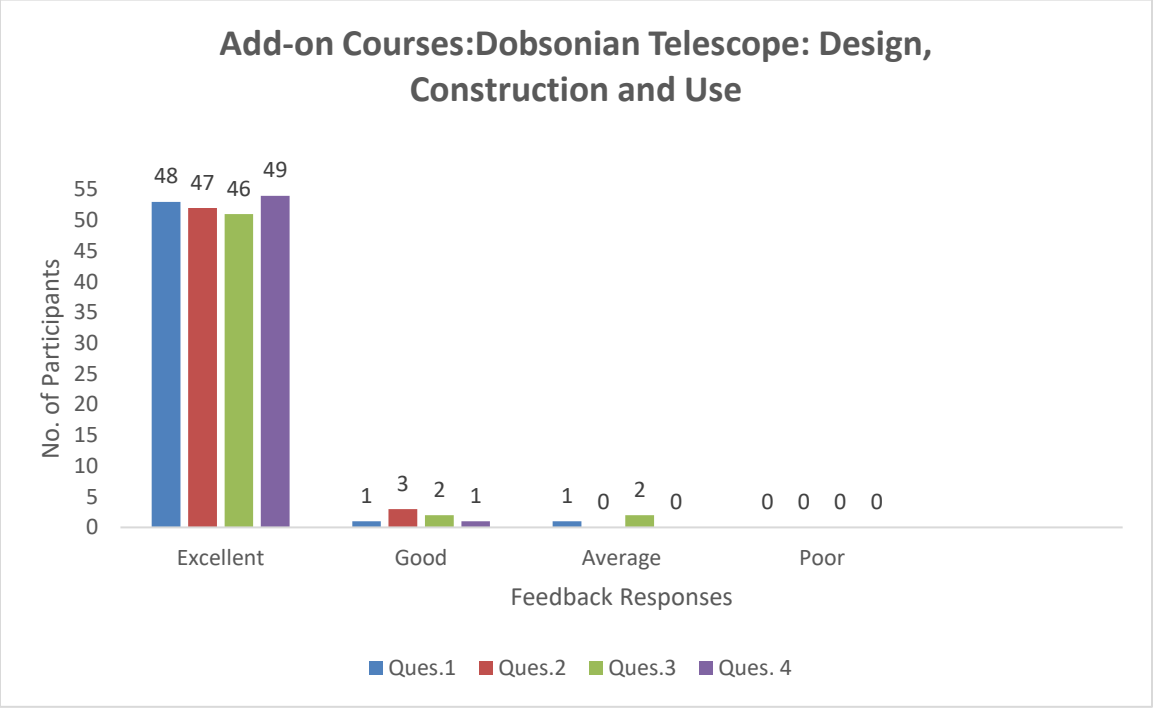
Duration: ***02/01/2023 to 20/03/2023***

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



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