



**Rayat Shikshan Sanstha's**

**Abasaheb Marathe Arts and New Commerce, Science College, Rajapur, Dist-Ratnagiri, 416 702 (MH)**

*Affiliated to University of Mumbai, Mumbai*

*Reaccredited with B<sup>+</sup> grade by NAAC/ Best college Award by University of Mumbai, Mumbai*

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**List of collaborative activities during the academic year 2023-24**

<b>Sl. No.</b>	<b>Title of the collaborative activity</b>	<b>Name of the collaborating agency with contact details</b>	<b>Name of the participant</b>	<b>Year of collaboration</b>	<b>Duration</b>	<b>Nature of the activity</b>
1	Faculty exchange	Prof. Vijay Gosavi, Assistant Professor, ACS College, Rahata	Department of Economics	2023	1	Guest lecture
2	Faculty exchange	Mrs. Shital Barge, Assistant Professor, Deur College, Satara	Department of Economics	2023	1	Guest lecture
3	Faculty exchange	Mrs. Shital Barge, Assistant Professor, Deur College, Satara	Commerce Association	2023	1	Guest lecture
4	Faculty exchange	A.C.S. College, Lanja, Dist- Ratnagiri	Dr. H. N. Akolkar	2024	1	Guest lecture
5	Faculty exchange	Agasti College, Akole, Dist- Ahmednagar	Dr. H. N. Akolkar	2024	1	Guest lecture

6	Research	Dr. Vijay Khedkar, Department of Pharmacy, Vishwkarma University, Pune	Dr. H. N. Akolkar	2023	1	Research Paper, Patent
7	Research	Dr. Nirmala Darekar, Assistant Professor, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar	Dr. H. N. Akolkar	2023	1	Research Paper, Patent
8	Research	Dr. Dipak N. Raut, Department of Pharmacy, Amrutvahini college, Sangamner, Ahmednagar	Dr. H. N. Akolkar	2023	1	Research Paper, Patent
9	Research	Dr. Mubarak Shaikh, Assistant Professor, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar	Dr. H. N. Akolkar	2023	1	Research Paper, Patent



Rayat Shikshan Sanstha's  
Abasaheb Marathe Arts and New Commerce, Science College, Rajapur – 416702

Department of Economics Organized

**Special Guest Lecture on –  
“CAREER OPPORTUNITIES IN ECONOMICS”**

**One Page Report**

**Date:** 06/02/2024

**Preamble:**

On 6<sup>th</sup> February 2024, Department of Economics organized special guest lecture on 'Career Opportunities in Economics'. This activity was conducted for the students to understand the career opportunities in Economics after graduation.

**Description of activity:**

The special guest lecture was organized by the department of Economics. The event was inaugurated by I/c Prin. Dr. G. D. Harale. Prof. Vijay Gosavi (Assistant Professor, Department of Economics, ASC College, Rahata) was present as a resource person. Prof. Vijay Gosavi explained various opportunities in Economics and Finance to the students. Dr. Gaurav Pawar extended the vote of thanks. Entire workshop was coordinated with the support of Principal, faculty members and students of Abasaheb Marathe Arts and New Commerce, Science College, Rajapur.

**Participants profile:**

Total 41 participants were present for the workshop.

Dr. G. G. Pawar  
(Co-ordinator)

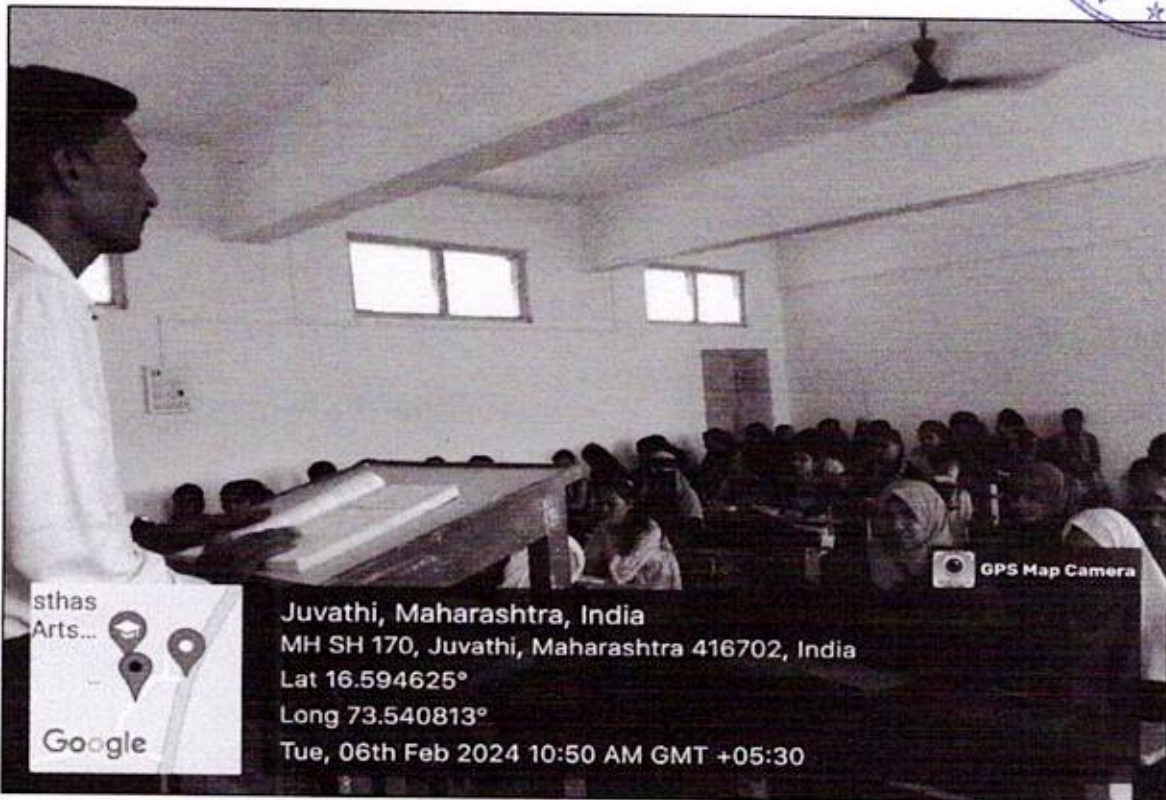
Miss. N. A. R. Solkar  
(Convenor)

Principal  
A.M.A & N.C.S. College  
Rajapur, Dist. Ratnagiri





Special Guest Lecture on –  
“CAREER OPPORTUNITIES IN ECONOMICS”  
Geo-Tagged Photos





Rayat Shikshan Sanstha's

Abasaheb Marathe Arts and New Commerce, Science College, Rajapur – 416702

Department of Economics Organized

Special Guest Lecture on –

“Preparation of Banking Related Competitive Examinations”

One Page Report

**Date:** 11/08/2023

**Preamble:**


On 11<sup>th</sup> August 2023, Department of Economics organized special guest lecture on 'Preparation of Banking Related Competitive Examinations'. This activity was conducted for the students to understand the career opportunities in Banking & Finance after graduation.

**Description of activity:**

The special guest lecture was organized by the department of Economics. The event was inaugurated by I/c Prin. Dr. G. D. Harale. Mrs. Shital Barge (Assistant Professor, Department of Commerce, Deur College, Satara) was present as a resource person. The event was introduced by Miss. N. A. R. Solkar (Assistant Professor & Head, Department of Economics). Mrs. Shital Barge explained various opportunities in Economics and Finance to the students. Dr. Gaurav Pawar extended the vote of thanks. Entire workshop was coordinated with the support of Principal, faculty members and students of Abasaheb Marathe Arts and New Commerce, Science College, Rajapur.

**Participants profile:**

Total 79 participants were present for the workshop.

  
Dr. G. G. Pawar  
(Co-ordinator)

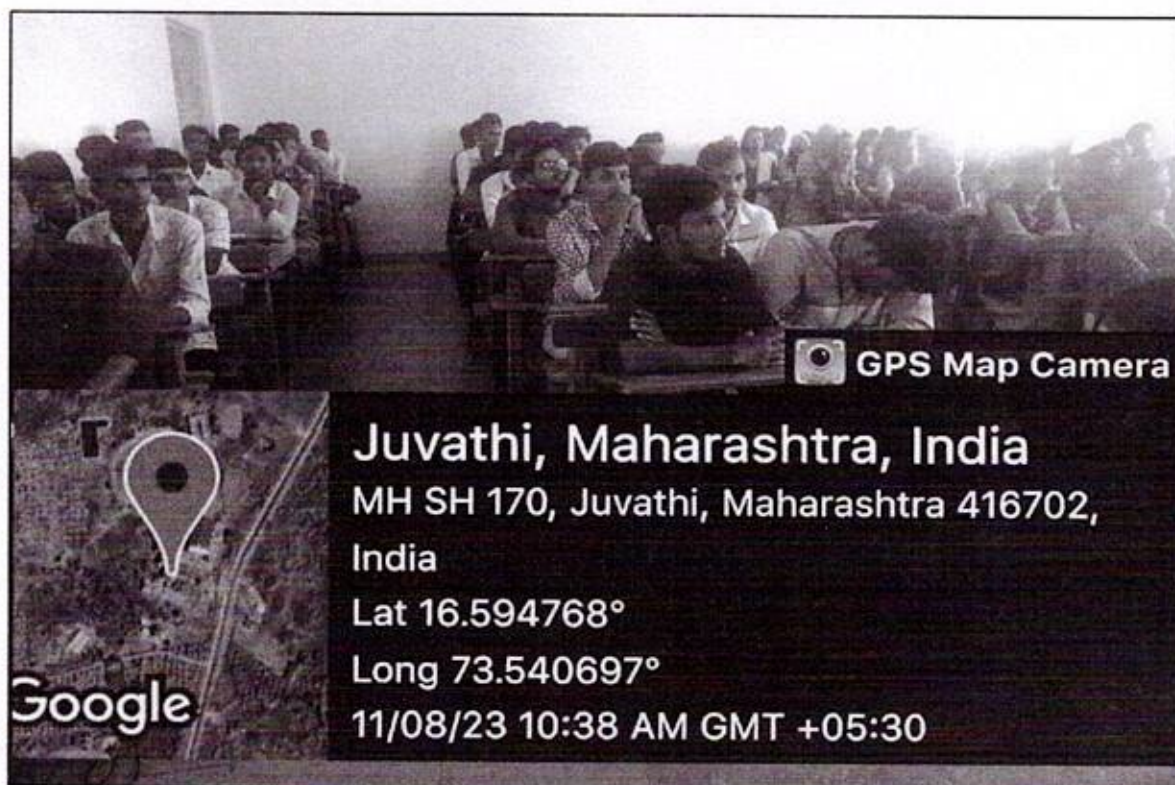
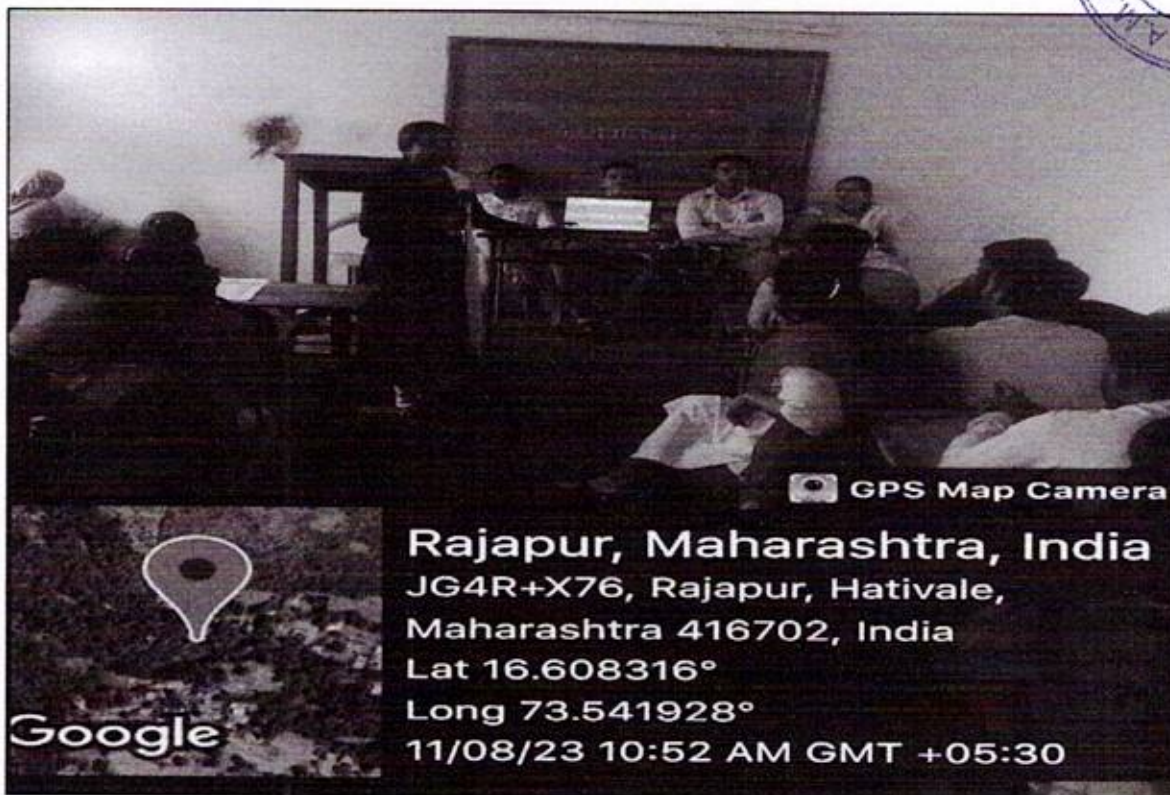
  
Miss. N. A. R. Solkar  
(Convenor)

  
Principal  
A.M.A & N.C.S. College  
Rajapur, Dist. Ratnagiri





Special Guest Lecture on –  
“Preparation of Banking Related Competitive Examinations”  
Geo-Tagged Photos







**Rayat Shikshan Sanstha's**  
**Abasaheb Marathe Arts and New Commerce, Science College, Rajapur,**  
**Dist. Ratnagiri - 416 702 (MH)**  
*Affiliated to University of Mumbai, Mumbai*  
*Reaccredited with B+ grade by NAAC/ Best College Award by University of Mumbai, Mumbai*

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## **Commerce Association**

### **Guest Lecture Report**

**Date:** - 12<sup>th</sup> August 2023

**Topic:** - ABCD of Share Market

**Preamble:** -

The guest lecture on 'ABCD of Share Market' has been conducted on 12<sup>th</sup> August 2023 at Abasaheb Marathe Arts and New Commerce, Science College, Rajapur. The guest lecture has been conducted to enhance knowledge of students about the awareness of share market.

**Participant Profile:-**

In total, 137 students were participated in the guest lecture.

**Description about the Programme:-**

The resource person **Ms. Shital Barge** delivering her presentation



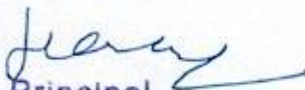


In the session, the resource person Ms. Shital Barge delivered her presentation on the ABCD of Share Market. The resource person explained briefly the concept of share market, D-mat and process of opening D-mat Account, Equity Market, Option Trading and how to earn income by trading in the share market. In the session, she also communicated with the students and solved queries of the students about the share market.

Dr. G. D. Harale, I/c Principal of the college as President threw light on the significance of investment in life and share market as the golden source of investment. He also briefly explained about the Rayat Shikshan Sanstha, Satara.

Dr. A. V. Bhave introduced the programme as well as the resource person and Ms. P. S. Talawdekar expressed the vote of thanks. The entire programme was co-ordinated with the support of the Principal, staff and students of Abasaheb Marathe Arts and New Commerce, Science College, Rajapur.

  
**Chairman**  
**Commerce Association**

  
**Principal**  
**A. M. A. & N. C. S. College**  
**Rajapur, Dist. Ratnagiri.**



**Dr. Arvind S. Kulkarni**  
**Principal**  
M.Sc. Ph.D. F.I.A.E.S.  
F.Z.S.I. D.Litt.



**Nana Vanjare Vidyanagari**

**New Education Society's**

**ARTS, COMMERCE AND SCIENCE COLLEGE, LANJA**

Lanja-Zapade Kante Road, Dist. Ratnagiri, Pin 416701. (Maharashtra)

Phone No.: Office 02351-230558, 231085, 230758

Email - lanjacollege@gmail.com

Web Site: www.acslanja.com

Accredited by NAAC (India) 'A' Grade - 3.17 CGPA

'Best College' University of Mumbai 2012-13

ACCLJ 876 /2023-24

Date: 18/01/2024

To,

**Dr. Hemantkumar Akolkar,**  
Head, Department of Chemistry,  
Abasaheb Marathe College,  
Rajapur.

Subject: Invitation as Resource Person for Guest Lecture on Research Methodology

Dear Sir,

Greeting from A. C. S. College, Lanja

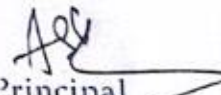
Department of Chemistry is organizing a Guest Lecture on Research Methodology for PG students. The Lecture will be organized at 27<sup>th</sup> January 2024. We invite you as Resource Person on above topic.

Corresponding Contact Person:

Head of Chemistry Department: Mr. B. T. Shinde (9096501286)

Kindly acknowledge your confirmation for the same.



  
Principal  
Arts, Commerce & Science College,  
Lanja, Dist. Ratnagiri (Maharashtra)

**Dr. Arvind  
S.Kulkarni**  
**Principal**  
M.Sc. Ph.D  
F.I.A.E.S., F.Z.S.I.  
D.Litt.



Nana Vanjare Vidyanagari  
New Education Society's  
**ARTS, COMMERCE AND SCIENCE COLLEGE, LANJA**  
Lanja- Zapade Kante Road, Dist. Ratnagiri. Pin 416701  
(Maharashtra )  
Phone No. : Office 02351-230558,  
Email-lanjacollege@gmail.com  
Web Site : [www.acslanja.com](http://www.acslanja.com)

Re-accredited by NAAC (India) ('A' Grade - 3.17 CGPA) 'Best College' University of Mumbai 2012-13  
An ISO 9001-2015 Certified Institute

ACCL/756/2023-24  
Date:- 12.02.2024

To,  
**Dr. Hemantkumar Akolkar,**  
Head,  
Abasaheb Marathe College,  
Rajapur - 416702.

Subject: Thank giving letter....

Dear Sir,

It was our great pleasure and heartfelt happiness to have you at our Guest Lecture – Research Methodology held by Chemistry Department, Arts Commerce and Science College Lanja, on 27<sup>th</sup> January 2024.

We are thankful to you for contributing informative topic, “Research Methodology” very lucid way

We happy to inform you that total 15 participants were present for this lecture. Lecture was made online on Google meet for participants.

On behalf of Art Commerce and Science college I appreciate you time spend and looking forward to have more collaboration and sharing for inculcate science knowledge for students future.

Thanking you



Yours faithfully

  
Dr. A. S. Kulkarni  
**Principal**  
Arts, Commerce & Science College,  
Lanja, Dist. Ratnagiri (Maharashtra)





साहसे श्री: प्रतिवसति ।

I.D.No.PU/AN/ASC/018/1974 HSC/1176/July 1976 DI 1.7.76 H.S.C.No.J-12.01.001

Akole Taluka Education Society's

**AGASTI ARTS, COMMERCE &  
DADASAHEB RUPWATE SCIENCE COLLEGE, AKOLE**

A/p. Tal. Akole, Dist. Ahmednagar, Pin - 422 601 (Maharashtra)

AIS,HE.Code : C-41748

I Savitribai Phule Pune University Best College Award - 2007

I NAAC Accredited 'A' Grade

**Dr. Bhaskar Shelke**  
Principal

I M.A. M.Phil., Ph.D., D.Litt.  
I Mob.: 9890088521. Ph. 02424 - 221248  
I E-mail : shelke\_bhaskar@yahoo.com

Ref. No. Ac / Sr. / PG Chemistry / १५५ / 2024

Date: 14/03/2024

To,

**Dr. Hemant Akolkar,**

Department of Chemistry,

A. M. A. & N. C. S. College,

Rajapur, Dist.- Ratnagiri 416702

**Subject: Invitation letter for a guest lecture...**

Dear Sir,

We are happy to invite you for a guest lecture on the 'Preparation of the topic Stereochemistry for NET/ SET/ GATE' arranged for M. Sc. Organic Chemistry students.

Our students will be benefited by your mastery over the subject and your guidance will inspire them to achieve excellence. Your lecture is scheduled on 18<sup>th</sup> March 2024 at 11:00 am.

Please accept our invitation.

Thanking You,

(Dr. Bhaskar Shelke)

**PRINCIPAL**

**AGASTI ARTS, COMM. & DADASAHEB  
RUPWATE SCIENCE COLLEGE, AKOLE  
TALAKOLE, DIST AHMEDNAGAR - 422 601**





साहसे श्रीः प्रतिवसति ।

U.D.No.PU/AN/ASC/018/1974 HSC/1176/July 1976 DL 1.7.76 H.S.C.No.J-12.01.001

Akole Taluka Education Society's

**AGASTI ARTS, COMMERCE &  
DADASAHEB RUPWATE SCIENCE COLLEGE, AKOLE**

A/p. Tal. Akole, Dist. Ahmednagar, Pin - 422 601 (Maharashtra)

**AIS,HE.Code : C-41748**

! Savitribai Phule Pune University Best College Award - 2007

! NAAC Accredited 'A' Grade

**Dr. Bhaskar Shelke**  
Principal

! M.A. M.Phil., Ph.D., D.Litt.  
! Mob : 9890686521, Ph. 02424 - 221248  
! E-mail : shelke\_bhaskar@yahoo.com

Ref. No. Ac / Sr. / PG Chemistry / ६९३ / 2024

Date: 22/03/2024

To,

**Dr. Hemant Akolkar,**

Department of Chemistry,

A. M. A. & N. C. S. College,

Rajapur, Dist.- Ratnagiri 416702

**Subject: Thanking letter...**

Dear Sir,

Thank you for delivering a lecture on 'Preparation of the topic Stereochemistry for NET/SET/GATE' to our M. Sc. Organic Chemistry students on 18<sup>th</sup> March 2024. The students, who attended the lecture, really enjoyed it. Your guidance is very useful for their preparation of NET/ SET/ GATE examinations.

We appreciate you for making time in your busy schedule for a lecture.

Thanking You,



*(Signature)*  
(Dr. Bhaskar Shelke)  
**PRINCIPAL**

AGASTI ARTS, COMM. & DADASAHEB  
RUPWATE SCIENCE COLLEGE, AKOLE  
TAL. AKOLE, DIST. AHMEDNAGAR - 422 601





पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

पेटेंट प्रमाण पत्र | Patent Certificate

(पेटेंट नियमावली का नियम 74) | (Rule 74 of The Patents Rules)


पेटेंट सं. / Patent No. : 457709  
आवेदन सं. / Application No. : 202221061719  
फाइल करने की तारीख / Date of Filing : 29/10/2022  
पेटेंटी / Patentee : 1.Dr. Hemantkumar Navnath Akolkar 2.Mr. Ramesh A. Kawale  
3.Dr. Mubarak Hanif Shaikh 4.Dr. Vijay Khedkar

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित *SUBSTITUTED 1, 2, 3 TRIAZOLE COMPOUNDS AS ANTIOXIDANT AGENT* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख अक्टूबर 2022 के उन्नीसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *SUBSTITUTED 1, 2, 3 TRIAZOLE COMPOUNDS AS ANTIOXIDANT AGENT* as disclosed in the above mentioned application for the term of 20 years from the 29<sup>th</sup> day of October 2022 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 09/10/2023  
Date of Grant :

  
पेटेंट नियंत्रक  
Controller of Patents

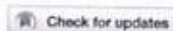
टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अक्टूबर 2024 के उन्नीसवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 29<sup>th</sup> day of October 2024 and on the same day in every year thereafter.


\*चूंकि पेटेंटी व आविष्कारकों की संख्या अधिक है, पेटेंटी व आविष्कारकों के नाम पृष्ठ संख्या 2 पर जारी हैं।

\*Since the Number of Patentees / Inventors is more, the name of Patentees / Inventors are continued on Page No. 2





## New 1,2,3-Triazole-Tethered Chalcone Derivatives: Synthesis, Bioevaluation and Computational Study

Ramesh A. Kawale<sup>a,b</sup>, Hemantkumar N. Akolkar<sup>c</sup>, Mubarak H. Shaikh<sup>a</sup> ,  
Vijay M. Khedkar<sup>d</sup>, Deepak N. Raut<sup>e</sup>, Nirmala R. Darekar<sup>a</sup>, Jaidip B. Wable<sup>f</sup>, and  
Sharad N. Shelke<sup>a,g</sup>

<sup>a</sup>Department of Chemistry, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar, Maharashtra, India;

<sup>b</sup>Department of Chemistry, Arts, Science and Commerce College Mokhada, Mokhada, Maharashtra, India;

<sup>c</sup>Department of Chemistry, Abasaheb Marathe Arts and New Commerce, Science College Rajapur, Ratnagiri,

Maharashtra, India; <sup>d</sup>School of Pharmacy, Vishwakarma University, Pune, Maharashtra, India; <sup>e</sup>Amrutvahini

College of Pharmacy, Sangamner, Maharashtra, India; <sup>f</sup>Department of Chemistry, KJ Somaiya College of

Science and Commerce, Vidyavihar, Mumbai, Maharashtra, India; <sup>g</sup>Department of Chemistry, RBNB College,  
Shrirampur, Maharashtra, India

### ABSTRACT

In search of new active molecules, a small focused library of novel 1,2,3-triazoles based chalcone derivatives has been efficiently prepared *via* the click chemistry approach. All the synthesized compounds were characterized with the help of IR, <sup>1</sup>H NMR, <sup>13</sup>C NMR and mass spectroscopic techniques. The synthesized novel 1,2,3-triazoles based chalcone derivatives evaluated for their anti-inflammatory and antioxidant activity. Furthermore, molecular modeling study could support these outcomes by demonstrating very good binding affinities at the active site of the cyclooxygenase 2 (COX-2) iterating the potential of this scaffold for further optimization.

### ARTICLE HISTORY

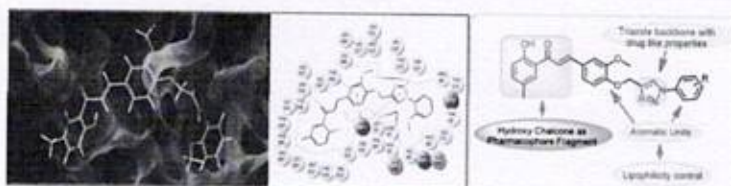
Received 12 December 2022

Accepted 23 October 2023

### KEYWORDS

Click chemistry; 1,2,3-triazoles; chalcone; anti-inflammatory; antioxidant



### GRAPHICAL ABSTRACT




## Introduction

Interest in chalcone scaffolds remains persistent due to their usefulness as diverse biological activities.<sup>1–3</sup> Some pharmacological activities attributed to chalcones and their synthetic analogues have been reported, such as antibacterial,<sup>3</sup> antifungal,<sup>4</sup> antioxidant,<sup>5,6</sup> antimalarial,<sup>7–9</sup> anti-cancer,<sup>10–12</sup> anti-HIV,<sup>13</sup> anti-inflammatory,<sup>14,15</sup> antimicrobial<sup>16</sup> and antileishmanial.<sup>17,18</sup>

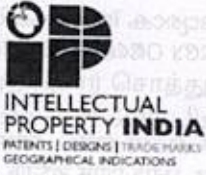
1,2,3-Triazoles are a class of five membered nitrogen rich heterocycles received great attention due to their ease of synthesis by click reaction using copper as a catalyst as well as variety of pharmacological scope and biological properties.<sup>19</sup> In recent years, 1,2,3-triazole scaffold have

CONTACT Sharad N. Shelke  [snshelke@yahoo.co.in](mailto:snshelke@yahoo.co.in)  Department of Chemistry, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar, 414001, Maharashtra, India.

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/10406638.2023.2276239>.

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क्रम सं/SL No :022137056



पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India
पेटेंट प्रमाण पत्र | Patent Certificate

(पेटेंट नियमावली का नियम 74) | (Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No. : 503070

आवेदन सं. / Application No. : 202321028067

फाइल करने की तारीख / Date of Filing : 17/04/2023

पेटेंटी / Patentee : 1. Dr. Hemantkumar Navnath Akolkar 2. Dr. Sujata G. Dengale 3. Ms. Nirmala Ramdas Darekar 4. Dr. Mubarak Hanif Shaikh

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित SUBSTITUTED BENZOFURAN COMPOUNDS AS ANTIBACTERIAL AGENT नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख अप्रैल 2023 के सत्रहवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled SUBSTITUTED BENZOFURAN COMPOUNDS AS ANTIBACTERIAL AGENT as disclosed in the above mentioned application for the term of 20 years from the 17th day of April 2023 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 24/01/2024
Date of Grant :

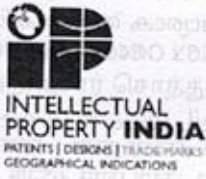
Signature of Controller of Patents
पेटेंट नियंत्रक
Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अप्रैल 2025 के सत्रहवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 17th day of April 2025 and on the same day in every year thereafter.

\*यदि पेटेंटी व आविष्कारको की संख्या अधिक है, पेटेंटी व आविष्कारको के नाम पृष्ठ संख्या 2 पर जारी है।
\*Since the Number of Patentees / Inventors is more, the name of Patentees / Inventors are continued on Page No. 2





**पेटेंट प्रमाणपत्र के लिए अनुलग्नक/Annexure to Patent Certificate**

**पेटेंट सं. / Patent No.**

**503070**

**आवेदन सं. / Application No.**

**202321028067**

**फाइल करने की तारीख / Date of Filing**

**17/04/2023**

**पेटेंटी / Patentee (जारी/Continued)**

**5.Dr. Vijay Khedkar 6.Dr. Keshav K. Deshmukh 7.Mr. Ganesh Bhangare 8.Mr. Sandesh D. Kasar**





## SYNTHESIS AND CHARACTERIZATION OF NEW THIAZOLYL 1,3,4- OXADIAZOLE AND 1,2,4-TRIAZOLE DERIVATIVES

Nirmala R. Darekar<sup>a</sup>, Sujata G. Dengale<sup>b</sup>, Kulbhushan A. Sasane<sup>c</sup>, Shripad M. Patil<sup>d</sup>,  
Hemantkumar N. Akolkar<sup>\*c</sup>

<sup>a</sup>Department of Chemistry, Radhabai Kale Mahila Mahavidyalaya, Ahmednagar, 414 001, Maharashtra, India.

<sup>b</sup>Department of Chemistry, S. N. Arts, D. J. Malpani Commerce and B. N. Sarda Science College, Sangamner, Dist. Ahmednagar, Maharashtra, 422 605, India.

<sup>c</sup>Department of Chemistry, Abasaheb Marathe Arts and New Commerce, Science College, Rajapur, Dist- Ratnagiri, 416 702, Maharashtra, India.

<sup>d</sup>Department of Chemistry, Dadapatil Mahavidyalaya, Karjat, Ahmednagar, 414 402, Maharashtra, India.

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### ABSTRACT

In the present study, we have synthesized new 5-(2-aryl-4-methylthiazol-5-yl)-1,3,4-oxadiazole-2-thiols **5** and 4-amino-5-(2-aryl-4-methylthiazol-5-yl)-4*H*-1,2,4-triazole-3-thiols **6**. All the newly synthesized compounds were characterized with the help of IR, <sup>1</sup>H NMR and Mass spectroscopic techniques.

**KEYWORDS:** 1,3,4-oxadiazole, 1,2,4-triazole, thiazole, thiophene

### INTRODUCTION

Heterocyclic compounds have attracted a lot of interest because of their many important applications in biology and medicine. Heterocycles are also useful in a variety of disciplines, such as biology and pharmaceutical chemistry. The primary uses of heterocyclic compounds are in pharmaceuticals, agrochemicals, and veterinary products. 1,3,4-Oxadiazole-containing compounds possess various biological activities such as antibacterial<sup>i</sup>, anticancer<sup>ii</sup>, antimicrobial<sup>iii</sup>, antitubercular<sup>iv</sup>, insecticidal<sup>v</sup>, anti-oxidant and anti-inflammatory<sup>vi</sup>, analgesic<sup>vii</sup>, fungicidal<sup>viii</sup>, antidepressant<sup>ix</sup>, etc. 1,2,4-Triazole containing compounds known to have various pharmacological applications such as, anti-bacterial<sup>x</sup>, antileishmanial<sup>xi</sup>, fungicidal<sup>xii</sup>, anticancer<sup>xiii</sup>, herbicidal<sup>xiv</sup>, etc. Activities associated with heterocycles prompted us to synthesize thiazolyl 1,3,4-oxadiazole and 1,2,4-triazole derivatives.

### RESULT AND DISCUSSION

We have synthesized 5-(2-aryl-4-methylthiazol-5-yl)-1,3,4-oxadiazole-2-thiols **5** from 2-aryl-4-methylthiazole-5-carbohydrazide **4** on reaction with carbon disulfide in KOH. The IR



## New 1,2,3-Triazole-Tethered Chalcone Derivatives: Synthesis, Bioevaluation and Computational Study

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Vijay M. Khedkar<sup>d</sup>, Deepak N. Raut<sup>e</sup>, **Nirmala R. Darekar<sup>a</sup>**, Jaidip B. Wable<sup>f</sup>, and  
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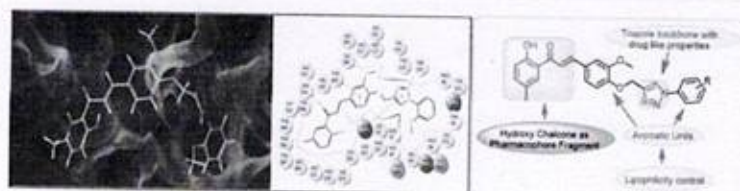
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### GRAPHICAL ABSTRACT




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Interest in chalcone scaffolds remains persistent due to their usefulness as diverse biological activities.<sup>1–3</sup> Some pharmacological activities attributed to chalcones and their synthetic analogues have been reported, such as antibacterial,<sup>3</sup> antifungal,<sup>4</sup> antioxidant,<sup>5,6</sup> antimalarial,<sup>7–9</sup> anti-cancer,<sup>10–12</sup> anti-HIV,<sup>13</sup> anti-inflammatory,<sup>14,15</sup> antimicrobial<sup>16</sup> and antileishmanial.<sup>17,18</sup>

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आवेदन सं. / Application No. : 202221061719  
फाइल करने की तारीख / Date of Filing : 29/10/2022  
पेटेंटी / Patentee : 1.Dr. Hemantkumar Navnath Akolkar 2.Mr. Ramesh A. Kawale  
3.Dr. Mubarak Hanif Shaikh 4.Dr. Vijay Khedkar

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अनुदान की तारीख : 09/10/2023  
Date of Grant :

  
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**टिप्पणी** - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अक्टूबर 2024 के उन्नीसवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

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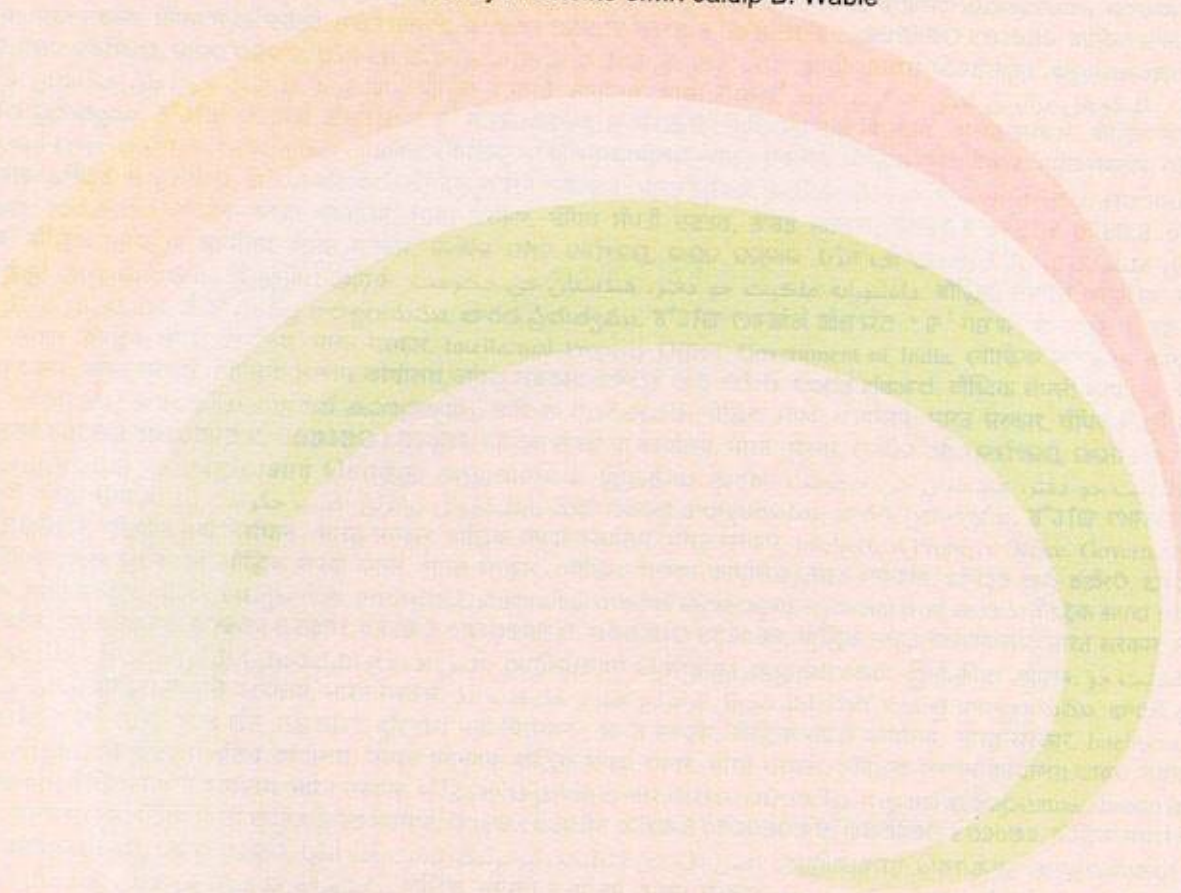




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क्रम सं/SL No :022137056



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(Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No. : 503070

आवेदन सं. / Application No. : 202321028067

फाइल करने की तारीख / Date of Filing : 17/04/2023

पेटेंटी / Patentee : 1. Dr. Hemantkumar Navnath Akolkar 2. Dr. Sujata G. Dengale 3. Ms. Nirmala Ramdas Darekar 4. Dr. Mubarak Hanif Shaikh

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पेटेंट नियंत्रक  
Controller of Patents

अनुदान की तारीख : 24/01/2024  
Date of Grant :

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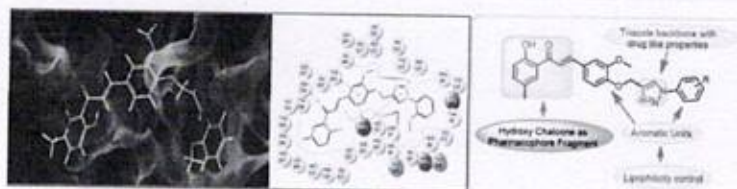
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### GRAPHICAL ABSTRACT




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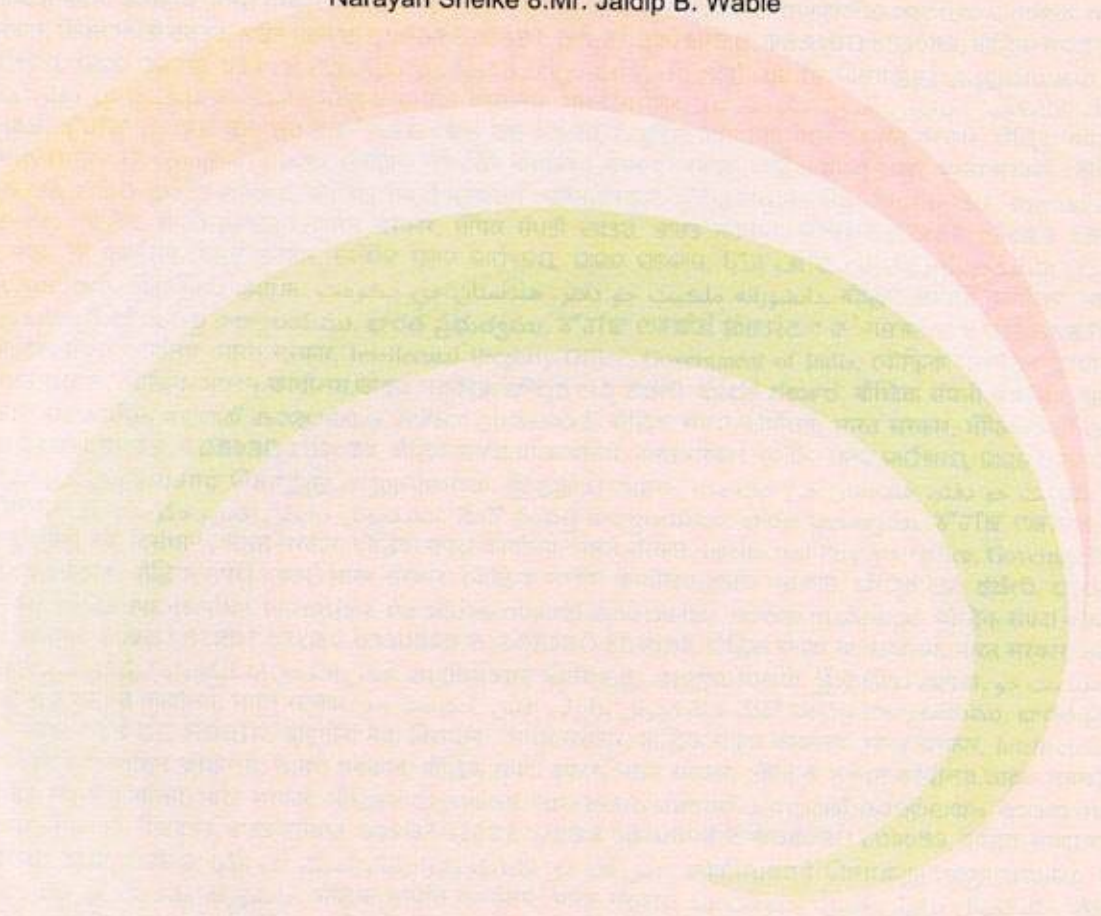




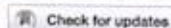
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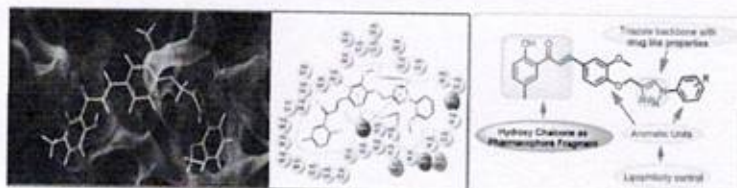
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टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अक्टूबर 2024 के उन्नीसवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।  
Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 29<sup>th</sup> day of October 2024 and on the same day in every year thereafter.

\*चूंकि पेटेंटी व आविष्कारकों की संख्या अधिक है, पेटेंटी व आविष्कारकों के नाम पृष्ठ संख्या 2 पर जारी हैं।

\*Since the Number of Patentees / Inventors is more, the name of Patentees / Inventors are continued on Page No. 2





क्रम सं/SL No :022137056



पेटेंट कार्यालय, भारत सरकार

The Patent Office, Government Of India

पेटेंट प्रमाण पत्र

Patent Certificate

(पेटेंट नियमावली का नियम 74)

(Rule 74 of The Patents Rules)

पेटेंट सं. / Patent No. : 503070

आवेदन सं. / Application No. : 202321028067

फाइल करने की तारीख / Date of Filing : 17/04/2023

पेटेंटी / Patentee : 1. Dr. Hemantkumar Navnath Akolkar 2. Dr. Sujata G. Dengale 3. Ms. Nirmala Ramdas Darekar 4. Dr. Mubarak Hanif Shaikh

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित *SUBSTITUTED BENZOFURAN COMPOUNDS AS ANTIBACTERIAL AGENT* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख अप्रैल 2023 के सत्रहवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *SUBSTITUTED BENZOFURAN COMPOUNDS AS ANTIBACTERIAL AGENT* as disclosed in the above mentioned application for the term of 20<sup>th</sup> day of April 2023 in accordance with the provisions of the Patents Act, 1970.



पेटेंट नियंत्रक  
Controller of Patents

अनुदान की तारीख : 24/01/2024  
Date of Grant :

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अप्रैल 2025 के सत्रहवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।  
Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 17<sup>th</sup> day of April 2025 and on the same day in every year thereafter.

\*यदि पेटेंटी व आविष्कारकों की संख्या अधिक है, पेटेंटी व आविष्कारकों के नाम पृष्ठ संख्या 2 पर जारी है।  
\*Since the Number of Patentees / Inventors is more, the name of Patentees / Inventors are continued on Page No. 2