

# RESEARCH PROJECTS

HOW TO START ....

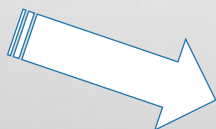
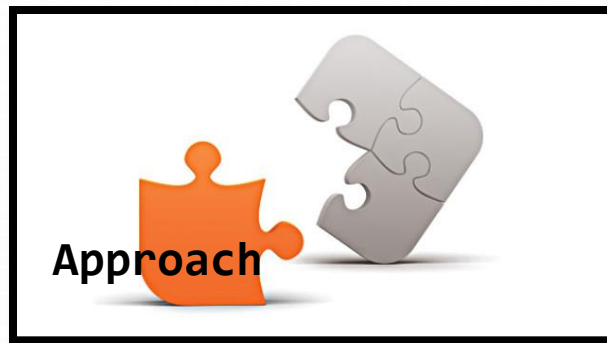
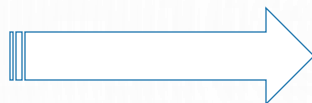


# What is Research ?



## Art of scientific investigation

Redman and Mory define research as a **“systematized effort to gain new knowledge.”**



Publications





# SYSTEMATIC APPROACH



Deciding  
Problems



Chemical  
Testing



Analyzing  
Results

## Types of Research



# Literature Sources



- ☐ Primary Source
- ☐ Secondary Source
- ☐ Tertiary Source

## Primary Source

❖ For your own "**new**" view of the topic, guided by your review of what existing secondary sources

❖ Primary source can be A Research Paper

❖ **Academic research** is based primarily on the analysis of primary sources, guided by perspectives on the topic which already exist via secondary sources

❖ Secondary Source can be a Review Paper

## Secondary Source

- ❖ These sources are works written on the topic in question by other researchers
- ❖ **Secondary sources are based on primary sources** — they are usually studies which analyze, evaluate, interpret, or criticize primary sources.
- ❖ To determine what others have already reported about a particular research topic
- ❖ Secondary sources are "second-hand information," analogous to human conversation.
- ❖ Secondary sources **can be articles in newspapers or popular magazines, book or reviews, or articles found in scholarly journals that address someone else's original research.**



## Tertiary Source

- ❖ **General explanations condensed from 'common knowledge'** on the topic intended for a broad public audience.
- ❖ These sources are usually **not credited to a particular author**.
- ❖ These are **intended only to provide a superficial overview** of what the topic includes, its basic terminology, and **often references for further reading**
- ❖ Generally, tertiary sources **are not considered to be acceptable material** on which to base **academic research**

# **PROJECTS UNDER (UG) SYLLABUS**

- SEPARATION AND ANALYSIS TECHNIQUES OF ORGANIC POLLUTANTS IN WATER SAMPLE
- EXTRACTION METHODOLOGY OF NATURAL PRODUCTS FROM PLANT SOURCES
- FACILE APPROACH TOWARDS DYE SYNTHESIS
- STUDY OF CATALYTIC PROPERTIES OF TRANSITION METALS
- VARIOUS CHROMATOGRAPHIC STUDIES
- STUDY OF USEFUL METHODS INVOLVED IN THE PREPARATION OF SOAP AND HAND SANITIZERS

# **RESEARCH DATABASE PLATFORMS**

GOOGLE SCHOLAR

RESEARCHGATE

SCI-FINDER

SHODHGANGA (@INFLIBNET)

SHODHGANGOTRI

SIGMRA-ALDRICH WEBSITE (FOR CHEMICAL DETAILS)

CHEMSPIDER

WEB OF SCIENCE

PUBMED- FOR MEDICINAL CHEMISTRY





## Recommended articles



- ☆ Red-emissive carbon dots from Hibiscus rosa-sinensis: a detailed appraisal of tartrazine dye sensing properties
- N Garg, N Sharma, A Dan, S Chaudhary
- Microchimica Acta - 3 days ago

More articles from 3 days ago

- ☆ Repurposing expired metformin to fluorescent carbon quantum dots for ratiometric and color tonality visual detection of tetracycline with greenness evaluation  
SSM Ameen, A Bedair, M Hamed, FR Mansour, KM Omer  
Microchemical Journal - 4 days ago

- ☆ Boron-doped carbon dots with time-resolved room temperature phosphorescence for detection of ciprofloxacin hydrochloride and information encryption applications
- X Wang, X Wei, R Tong, C Yi, Y Wang, Y Fu, F Yan
- Microchimica Acta - 4 days ago

EN English (India)





**N-LIST**

National Library and Information Services  
Infrastructure for Scholarly Content  
extending access to e-Resources to colleges in India

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### Who are eligible?

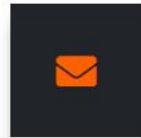
- ✓ All colleges covered under Sections 12(B) and 2(f) of the UGC Act.
- ✓ Non-Aided colleges (except Agriculture, Engineering, Management, Medical, Pharmacy, Dentistry and Nursing).

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**SUMMARY STATISTICS**  
@ N-LIST PROGRAMME

**TOP 10 COLLEGE USERS**  
BASED ON SEP-2024 USAGES

EN English (India)



# RESEARCH TOOLS / SOFTWARES FOR DATA ANALYSIS

ORIGIN

JCPDS (ICDD)

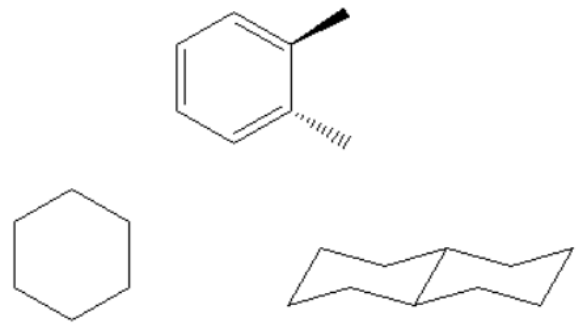
CHEMDRAW

CRYSTALMAKER

IMAGE J



Tool: X



# **TOOLS /SOFTWARE USEFUL IN PROJECT WORK WRITING**

ORIGIN (USEFUL TO PLOT CURVES)

MS- WORD

CHEMDRAW

MS-POWERPOINT (FOR PRESENTATIONS)

MS-EXCEL (FOR DATA SHEETS)

REFERENCE TOOLS ( MANDELEY, ENDNOTE, MS-WORD REFERENCE SYSTEM)





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My Research papers

TAA-CQD

New Collection

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New Group

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DK

| All References           |         |                                    |      |                                                                                          |                               | 🔍 Search   | ⌵ Filters                 |
|--------------------------|---------|------------------------------------|------|------------------------------------------------------------------------------------------|-------------------------------|------------|---------------------------|
| <input type="checkbox"/> | AUTHORS |                                    | YEAR | TITLE                                                                                    | SOURCE                        | ADDED ▾    | FILE                      |
| <input type="checkbox"/> | ●       | ☆ Mukherjee A, Sarkar N            | 2023 | A facile one-pot synthesis of water-soluble CQDs for the evaluation of their anti-a...   | Materials Advances            | 10/21/2024 | <div>⬆</div> <div>📄</div> |
| <input type="checkbox"/> | ●       | ☆ Gore A, Gunjal D, Kokate ...     | 2012 | Highly selective and sensitive recognition of cobalt(II) ions directly in aqueous sol... | ACS Applied Mater...          | 10/21/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Zheng J, Xie Y, Wei Y, Yan...    | 2020 | An efficient synthesis and photoelectric properties of green carbon quantum dots ...     | Nanomaterials                 | 10/21/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Xie Y, Zheng J, Wang Y, W...     | 2019 | One-step hydrothermal synthesis of fluorescence carbon quantum dots with high ...        | Nanotechnology                | 10/21/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Dervishi E, Ji Z, Htoon H, ...   | 2019 | Raman spectroscopy of bottom-up synthesized graphene quantum dots: Size an...            | Nanoscale                     | 10/20/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Zhuang Y, Lin B, Yu Y, Wa...     | 2021 | A ratiometric fluorescent probe based on sulfur quantum dots and calcium ion for ...     | Food Chemistry                | 10/20/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Abdulsattar J, Hadi H, Ric...    | 2020 | Detection of doxycycline hyclate and oxymetazoline hydrochloride in pharmaceuti...       | Analytica Chimica ...         | 10/20/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Becze A, Resz M, Ilea A, ...     | 2022 | A Validated HPLC Multichannel DAD Method for the Simultaneous Determination ...          | Applied Sciences (...)        | 10/20/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Fu Q, Li N, Lu K, Dong Z, ...    | 2024 | The emerging development of nitrogen and sulfur co-doped carbon dots: Synthes...         | Materials Today Ch...         | 10/17/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Da Silva Júnior A, Pier Ma...    | 2021 | Are carbon dots effective for ion sensing and antiviral applications? A state-of-the...  | Journal of Material...        | 10/17/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Yu J, Yong X, Tang Z, Yan...     | 2021 | Theoretical Understanding of Structure-Property Relationships in Luminescence ...        | Journal of Physical...        | 10/17/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Jiao J, Liu C, Li X, Liu J, D... | 2016 | Fluorescent carbon dot modified mesoporous silica nanocarriers for redox-respon...       | Journal of Colloid a...       | 10/17/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Yang Z, Wang M, Yong A, ...      | 2011 | Intrinsically fluorescent carbon dots with tunable emission derived from hydrother...    | Chemical Commun...            | 10/16/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Umar E, Ikram M, Haider J...     | 2024 | Corrigendum to "A state-of-the-art review on carbon quantum dots: Prospective, ...       | Sustainable Materi...         | 10/16/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Wu H, Mi C, Huang H, Ha...       | 2012 | Solvothermal synthesis of green-fluorescent carbon nanoparticles and their appli...      | Journal of Lumines...         | 10/16/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ Jia X, Li J, Wang E              | 2012 | One-pot green synthesis of optically pH-sensitive carbon dots with upconversion I...     | Nanoscale<br>EN Engng (India) | 10/16/2024 |                           |
| <input type="checkbox"/> | ●       | ☆ de Oliveira B, da Silva Abr...   | 2021 | Carbon quantum dots synthesis from waste and by-products: Perspectives and c...          | Materials Letters             | 5/19/2024  |                           |

## Important Scientific and Chemistry Journals publishing Groups

American Chemical Society (ACS)

AAS

Royal Society of Chemistry (RSC)

Wiley

Elsevier

Springer

Hindawi

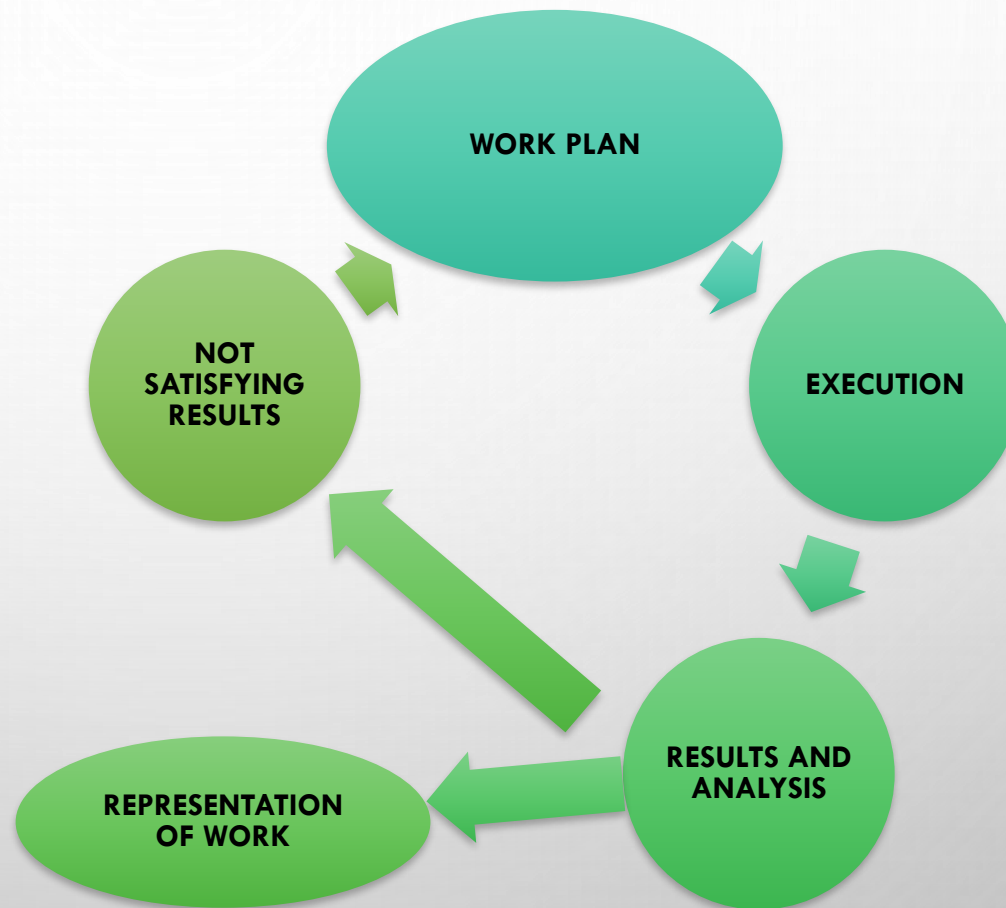
Indian Academy of Sciences

- and many more.....

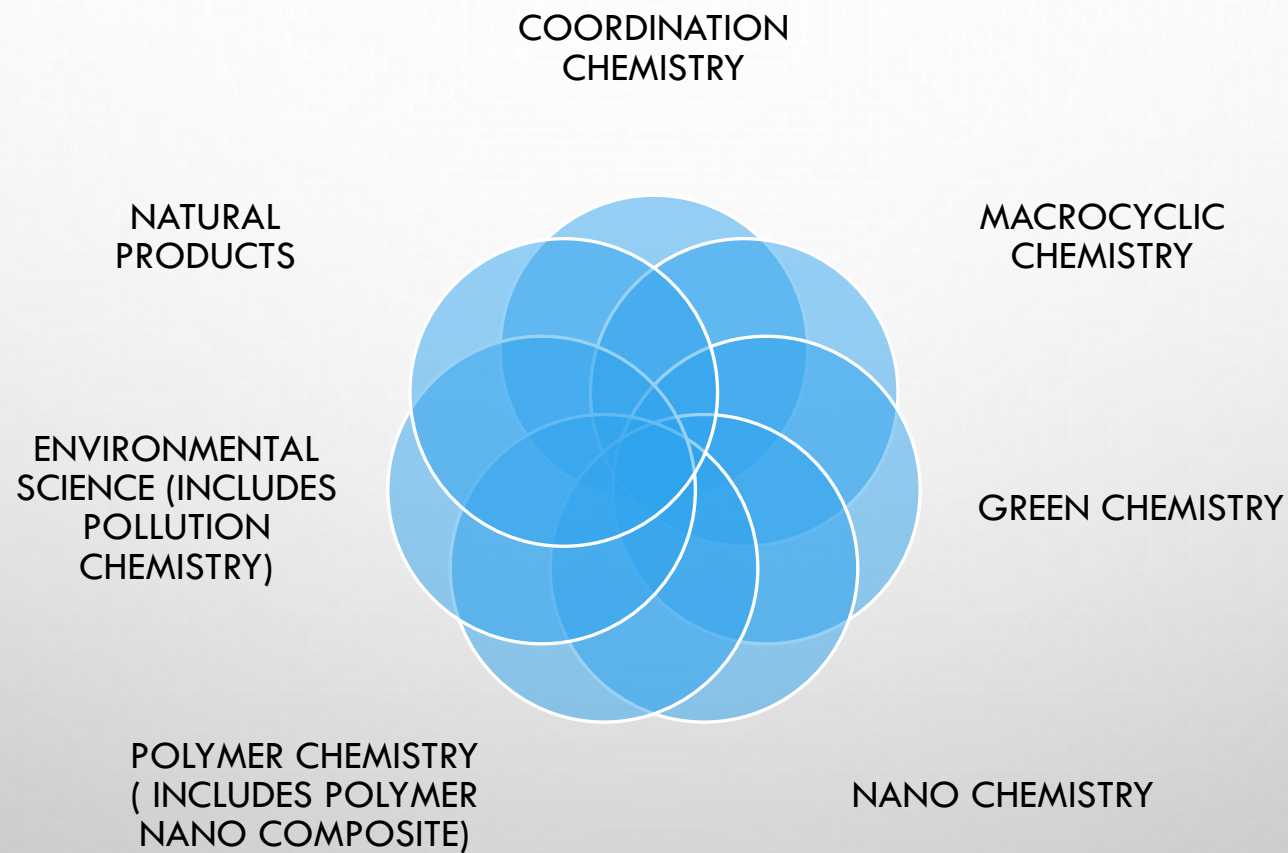
## Important Scientific and Chemistry Journals

- ✓ Nature
- ✓ Science
- ✓ Langmuir
- ✓ Angewandte Chemie
- ✓ Chemical Communications
- ✓ Progress in Polymer Science
- ✓ Journal of Physical Chemistry
- ✓ RSC Advances
- ✓ Applied Materials and Interfaces
- ✓ Advanced Materials
- ✓ Advanced Functional Materials
- ✓ Nature Materials
- ✓ Macromolecules
- ✓ Environmental Science and Technology

# SUCCESSFUL TESTING



# PROJECTS UNDER (PG) SYLLABUS





STUDY OF ULTRASONIC AND THERMOACOUSTIC  
BEHAVIOUR OF SOME ORGANIC LIQUIDS AND  
THEIR MIXTURES



PROJECT REPORT  
SUBMITTED TO

Dr. BHIMRAO AMBEDKAR UNIVERSITY  
AGRA

FOR THE FULLFILLMENT OF  
CERTIFICATE IN FACULTY

2023

UNDER THE SUPERVISION OF  
Prof. B.P. Singh  
DEPARTMENT OF PHYSICS  
INSTITUTE OF BASIC SCIENCES  
KHANDARI, AGRA

BY  
HEMANT KUMAR

*[Handwritten signature]*

***Format of Supervisor Certificate***

This is to certify that Mr./Ms. .... has worked for the .....( certificate/Diploma/degree name) in the ..... (Faculty name) under my supervision. The work reported in the present research report entitled "....." has been done by the candidate himself/herself, and has not been submitted elsewhere.

Date:

(Supervisor Signature)

(Full Name)

***Forwarded & Recommended***

(Signature &amp; Name)

Head of the Department

(Signature &amp; Name)

Principal/Director

Ref 07/2423 ✓

***Format Candidate Declaration***

I Mr./Ms. ....declare that work done in the present research report entitled “.....” has been done thoroughly by me and not copied and taken from any other literature related to this field. The related literature is used only to review the advancement and benefit of the research in this field and has not been submitted for any other degree.

Date:.....

Mr./Ms.:.....

s/o/d/o:.....

Roll. No. ....

Enrollment No .....

Class:.....

*on 6/4/23*  
*for*



## डा० भीमराव आंबेडकर विश्वविद्यालय, आगरा

(पूर्ववर्ती आगरा विश्वविद्यालय, आगरा)

### 5 संयुक्त लघु शोध प्रबन्ध का प्रारूप (Formate) :-

5.1 परास्नातक स्तर पर शोध परियोजना का संयुक्त लघु शोध प्रबन्ध (Dissertation) लगभग 60 से 80 पृष्ठों का दोनों तरफ से टाइप किया होना चाहिए। प्रबन्ध (Dissertation) का विभिन्न अध्याय में अध्यायीकरण (Chapterisation) होना चाहिए जैसे कि-

1. Introduction
2. Review of the Literature (लगभग 20 वर्ष का)
3. Methodology (Research design method)
4. Results
5. Discussion
6. Summary
7. References

शोध प्रबन्ध में विषय सूची, विभिन्न प्रमाणपत्र, तालिका एवं चित्रों की सूची, आवश्यक परिशिष्ट एवं Acknowledgement लगाने अनिवार्य है।

5.2 बृहद शोध परियोजना के संयुक्त प्रबन्ध (Dissertation) के प्रारूप के सम्बन्ध में विभिन्न प्रपत्र निम्न फार्मेट में होने चाहिए।

1. Formate for reference writing (according to Ph.D. format)
2. Formate for text writing (Annexure 1)
3. Formate for first Page (Annexure 2)
4. Formate for Supervisor and Principal/HOD certificate (Annexure 3)
5. Student declaration. (Annexure 4)

### 6 संयुक्त लघु शोध प्रबन्ध के मूल्यांकन की प्रक्रिया के संदर्भ में -

- 6.1 विश्वविद्यालय द्वारा पैनल गठन होने के उपरान्त बाह्य परीक्षक तथा सुपरवाइजर के द्वारा मूल्यांकन किया जायेगा। परास्नातक स्तर पर 30 छात्रों पर एक बाह्य परीक्षक नियुक्त होगा।
- 6.2 ओपन मौखिकी परीक्षा (Open Viva Voce) तथा पी0पी0टी0 प्रस्तुतिकरण (Power Point Presentation) जरूरी होगा।
- 6.3 संयुक्त लघु शोध प्रबन्ध के मूल्यांकन का पारिश्रमिक विश्वविद्यालय के नियमानुसार देय होगा।

सहायक कुलसचिव (शोध)  
सदस्य सचिव

(प्रो० संजय जैन)  
सदस्य सचिव

(प्रो० बी० के० सिंह)  
सदस्य

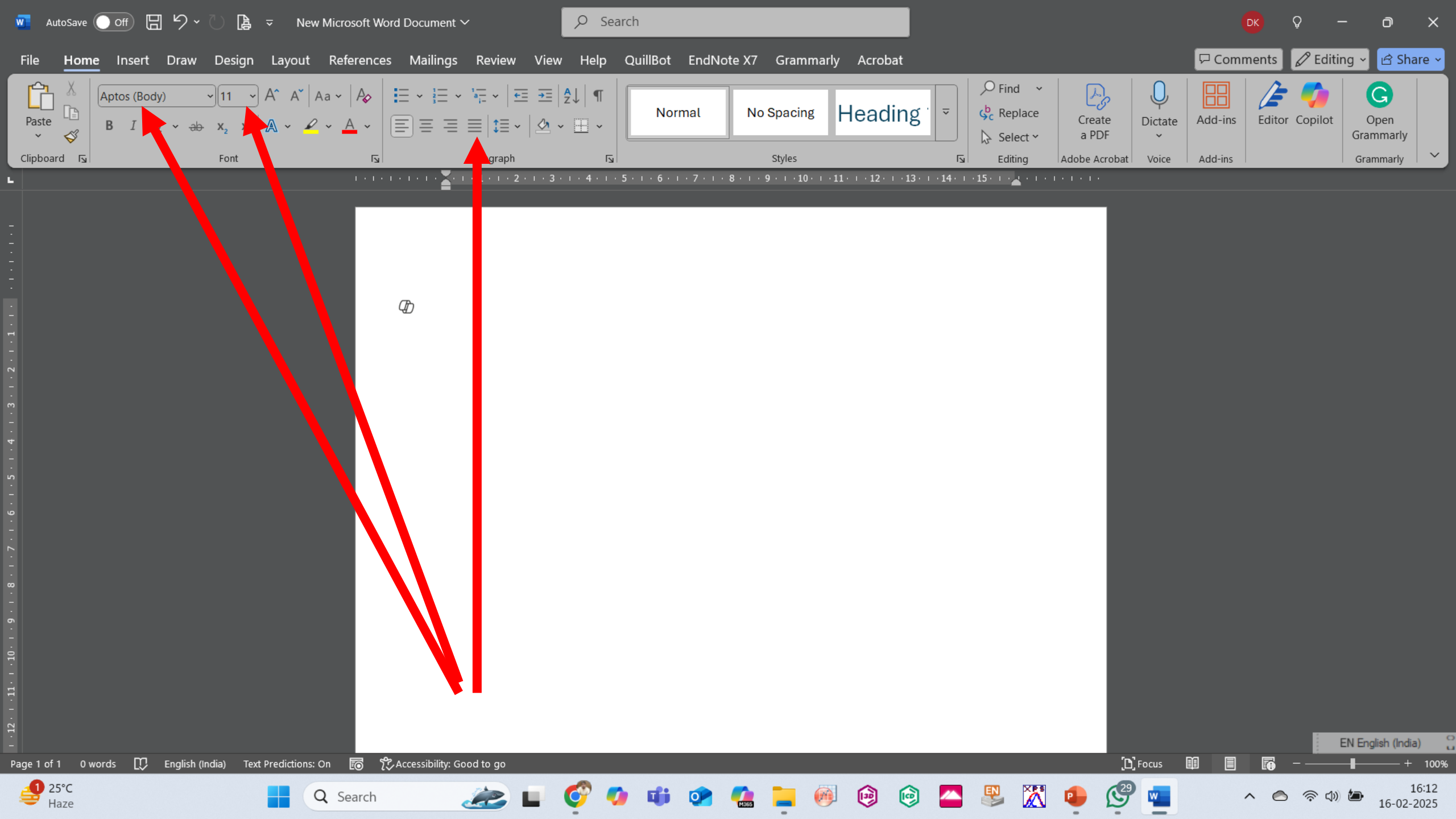
(प्रो० बी० सिंह)  
सदस्य

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1. Fonts used for writing the document is Times New Roman (English Medium) and Kruti Dev (Hindi Medium). The size of the font is 14 and spacing between lines is 1.5. Paragraphs of the documents are justify format and typed in black colour.
2. Document is typed both side of the paper, while Figure, Tables and Images are given in the last before the References.
3. References of the document will be numbered in square brackets such as [1], [2], [3]...









**LET'S RE-SEARCH**