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➤ Education

COMSATS University Islamabad, Lahore Campus
PhD Mathematics

Lahore, Punjab
Feb 2021 – April 2025

COMSATS University Islamabad, Vehari Campus (3.56/4)
MS Mathematics

Vehari, Punjab
Feb 2019 – Feb 2021

➤ Professional Experience

COMSATS University Islamabad, Vehari Campus

Vehari, Pakistan

COMSATS aims to reduce the ever-growing gap between the developed and developing world through useful applications of science and technology

Jan 2023-up to date

Lecturer of Mathematics:

- Enhancement of Teaching skills: Teaching in COMSATS enables me to learn and adopt modern teaching skills.

AMAL ACADEMY

Lahore, Pakistan

Education startup funded by Stanford University that teaches professional skills
To students and corporations

Dec 2020 – Feb 2021

Career-Prep Fellow:

- *Communication:* Completed a competitive written application and interview process to be selected from over 4500 applicants for intensive 3-month Fellowship funded by Stanford University
- *Skills development:* Investing 150 hours in order to develop business skills (e.g., communication, leadership, problem solving, teamwork, etc.) that will help me make a deeper impact on the job

University of Education

Vehari, Pakistan

The University of Education is a public research university.

Oct 2018- Aug 2020

Visiting Lecturer of Mathematics:

- Advance Teaching skills: Teaching in research institute enable me to learn the advance mathematics computing skills and some software's (e.g., MS Office, MATLAB, MAPLE)

Govt. Post Graduate College

Vehari, Pakistan

Govt Post Graduate college is affiliated with BISE Multan.

Oct 2018 – Sep 2019

CTI Mathematics:

- *Skills development:* Spending almost a year with almost 70+ students in each class developed teaching skills (e.g., Pressure absorbing, leadership, problem solving, teamwork, etc.) that will help me make a deeper impact on the job.

➤ Academic Experience

Ph.D. Thesis

Vehari, Pakistan

COMSATS University Islamabad, Lahore Campus

Feb 2021 – Apr 2025

Researcher:

- *Area of Research:* Graph Theory
- *Research Topic:* On Study of some Distinguishing Parameters for Graphs Associated to Algebraic Structures

MS Thesis

Completed 6 credit hours thesis work (COMSATS University Islamabad, Vehari Campus)

Vehari, Pakistan

Jan 2020 – Jan 2021

Researcher:

- *Area of Research:* Fractional Calculus
- *Research Topic:* Some Modified Numerical Method Using Fractional Derivative for Solving Nonlinear Equations
- *Computing Software and Research Skills:* During research learn many software's that are necessary for a mathematics teacher (e.g., Scientific Workplace, Latex, MS Word, etc.) and research skills (e.g., Books searching, Journals details, action research, etc.)

➤ Fields of Interest

- *Graph Theory (Specialization)*
 - *Algebraic Graph Theory*
 - *Chemical Graph Theory*
 - *Metric Graph Theory*
- *Combinatorics*
- *Algebraic Structures and Associated Graph*
- *Fractional Calculus*

➤ Projects/Publications

Research Paper

2026

1. **Ali, N.**, Arasu, R., Parvathi, N., Marimuthu, K., Qureshi, M. I., Siddiqui, H. M. A., & Smerat, A. (2026). Independent and Total Domination in Antiprism Graphs from Convex Polytope. *Mathematics Open*. (Q4, IF; N/A)
2. **Ali, N.**, Qureshi, M. I., Siddiqui, H. M. A., Karabiyik, Ü., Ayoubi, T., & Smerat, A. (2026). Combinatorial study of multiset dimension and outer multiset dimension in V-graphs over rings. *Research in Mathematics*, 13(1). <https://doi.org/10.1080/27684830.2026.2638603>. (Q1, IF: 1.1)
3. Ahmed, H. M. W., Hussain, M., Ali, N., Ahmad, M., & Smerat, A. *An Approach to the Atomic Bond Connectivity Index for Graphs Under Transformations Fact Over Pendant Paths*. Boletim da Sociedade Paranaense de Matemática. <https://doi.org/10.5269/bspm.79012> (Q3, IF: 0.4 — **Corresponding Author**)

2025

1. **Ali, N.**, Siddiqui, H. M. A., Qureshi, M. I., Ishaq, M., Smerat, A., Karabiyik, Ü. *A Novel Computational Technique Based on Python and MATLAB for Structural Analysis of Zero Divisor Graphs in Modular Rings*. Boletim da Sociedade Paranaense de Matemática, 43. <https://doi.org/10.5269/bspm.78031> (Q3, IF: 0.4 — **Corresponding Author**)
2. Suleiman, E., **Ali, N.**, Gwarzo, D. A., Qureshi, M. I., Siddiqui, H. M. A., Karabiyik, Ü., Smerat, A. *Exploring Structural Dynamics: Characterization of the Non-Rigid Group of Diethyl Ether Compound (C₂H₅)₂O*. Boletim da Sociedade Paranaense de Matemática, 43. <https://doi.org/10.5269/bspm.76736> (X, Q3, IF: 0.4 — **Corresponding Author**)

3. Riaz, A., Siddiqui, H. M. A., Riaz, M. B., & Ali, N. (2025). Computational graph-theoretic characterization of rings via outer multiset dimension of compressed zero-divisor graphs. *Ain Shams Engineering Journal*, 16(11). (W, Q1, IF: 5.6 — Corresponding Author)
4. Fraz, H.M., Ali, K., Nadeem, M.F., Ali, N., Tolasa, F. T. Predictive modeling of copper iodide properties using graph-theoretical descriptors. *Sci Rep* 15, 39878 (2025). <https://doi.org/10.1038/s41598-025-23657-w>. (Q1, IF: 3.9)
5. Ibrahim, M. M., Venkatesan, R., Ali, N., Qureshi, M. I., Siddiqui, H. M. A., Tolasa, F. T., & Abdallah, S. A. O. (2025). Enhanced image hash using cellular automata with sponge construction and elliptic curve cryptography for secure image transaction. *Scientific Reports*, 15(1), 14148. (W, Q1, IF: 3.9)
6. Ali, N., Siddiqui, H. M. A., & Qureshi, M. I. (2025). Characterizing Rings Based on Resolvability in Associated Compressed Zero Divisor Graphs. *Journal of Algebra and its Applications*, doi: 10.1142/S021949882541004X . (Q2, IF: 0.6)
7. Riaz, A., Siddiqui, H. M. A., & Ali, N. (2025). Graph-theoretic characterization of rings: Outer multiset dimension of zero-divisor graphs. *Discrete Applied Mathematics*, 377(C), 436–444. <https://doi.org/10.1016/j.dam.2024.09.032> (Q2, IF: 1.1 —Corresponding Author)
8. Deva, K., Marimuthu, K., Ali, N., Senthil, S., Tolasa, F. T., & Karabiyik, Ü. (2025). Picture fuzzy Aczel–Alsina power geometric aggregation operators with confidence level and their application to multi-criteria decision-making. *Discover Applied Sciences*, 7(9), 953. (X, Q2, IF: 3.0)
9. Rajeswari, S., Santhiya, S., Donbosco, D., Marimuthu, K., Ali, N., & Karabiyik, Ü. (2025, December). An Inventory Model Incorporating Interval-Valued Generalized Trapezoidal Bipolar Fuzzy Numbers in EOQ and JIT Frameworks. In *Operations Research Forum* (Vol. 6, No. 4, p. 176). Cham: Springer International Publishing. (Y, Q3, IF: 0.3 — Corresponding Author)
10. Ali, N., Qousini, Maysoon , Qureshi, Muhammad Imran & Siddiqui, Hafiz Muhammad Afzal (2025) Investigating topological spaces arising from commutative rings via associated zero divisor graphs : A holistic approach, *Journal of Interdisciplinary Mathematics*, :, 1-4, DOI: [10.47974/JIM-2161](https://doi.org/10.47974/JIM-2161). (Q3, IF: 0.4, —Corresponding Author)
11. Ali, N., Siddiqui, H. M. A., Qureshi, M. I., & Karabiyik, Ü. (2025). On the Study of Algebraic Structures: Multiset Dimensions in Zero-Divisor Graphs Associated with Rings. *Boletim da Sociedade Paranaense de Matemática*, 43, 1–11. <http://dx.doi.org/10.5269/bspm.76308>. (Q3, IF: 0.4, — Corresponding Author)
12. Ali, N., Siddiqui, H. M. A., Qureshi, M. I., & Karabiyik, Ü. (2025). Computing dominating number and dominant metric dimension for zero divisor graphs of order at most 10 small finite commutative rings. *Boletim da Sociedade Paranaense de Matemática*, 43, 1–10. <https://doi.org/10.5269/bspm.76442>. (X, Q3, IF: 0.4, — Corresponding Author)
13. Qureshi, M. I., Sattar, S., Fahad, A., Ali, N., Saleem, M. S. Generalized Hermite-Hadamard Type Inequalities for MT-Non-Convex Functions via Fractional Integrals. *Boletim da Sociedade Paranaense de Matemática*. <https://doi.org/10.5269/bspm.76951> (X, Q3, IF: 0.4, — Corresponding Author)

14. Vijayabalan, D., Rosary, M. S., **Ali, N.** *Fuzzy Random Variables and Transforms: A Modern Perspective on Signal Processing*. Boletim da Sociedade Paranaense de Matemática. <https://doi.org/10.5269/bspm.76443> **(X, Q3, IF: 0.4, —Corresponding Author)**
15. Sangeetha, S., Saleh, A. A., Anandhababu, D., Marimuthu, K., Ali, N., Karabiyik, Ü. *Viscosity Variation with Velocity Slip Effect Using Couple Stress Fluid Between Rough Conical Bearings*. Boletim da Sociedade Paranaense de Matemática. <https://doi.org/10.5269/bspm.78374> **(X, Q3, IF: 0.4, —Corresponding Author)**
16. Saleh, S. N., Naseer, M. K., **Ali, N.**, Karabiyik, Ü., Zakir, M. S., & Arshad, M. (2025). Graph-theoretical approaches to entropy in Cu₂O crystalline structures: implications for biomedical and energy applications. *Commun. Math. Biol. Neurosci.*, 2025, Article-ID. **(X, Q4, IF: 0.2 — Corresponding Author)**
17. Lanlege, D. I., Fadugba, S. E., **Ali, N.**, Ozioko, A. L., Alam, N., Ahmad, S., ... & Sayed-Ahmed, M. Z. (2025). Mathematical model of the social pathogen of HIV/AIDS stigma. *Commun. Math. Biol. Neurosci.*, 2025, Article-ID. **(X, Q4, IF: 0.2 — Corresponding Author)**
18. Ghaffar, A., Javid, M. A., Yaseen, K., **Ali, N.**, Arshad, S., El-Bahkiry, H. S., ... & Akgül, A. (2025). Innovative fusion: MRSI-guided brain tumour classification via integrated image segmentation and GLCM feature extraction. *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, 13(1), 2479707. **(X, Q4, IF: 1.3)**
19. **Ali, N.**, Haider, M. T., Ahmad, M., Irfan, M., Qureshi, M. I., & Siddiqui, H. M. A. (2025). Applications of graph transformations in cryptography: A secure encoding framework for data communication. *Global Integrated Mathematics*, 1(1), 28-43. **(Not Indexed — Impact Factor: N/A)**

2024

1. **Ali, N.**, Siddiqui, H. M. A., Riaz, M. B., Qureshi, M. I., & Akgül, A. (2024). A graph-theoretic approach to ring analysis: dominant metric dimensions in zero-divisor graphs. *Heliyon*. **(Q1, IF: 3.6—Corresponding Author)**
2. **Ali, N.**, Waseem, M., Safdar, M., Akgül, A., & Tolasa, F. T. (2024). Iterative solutions for nonlinear equations via fractional derivatives: adaptations and advances. *Applied Mathematics in Science and Engineering*, 32(1), 2333816. **(W, Q1, IF: 2.5)**
3. **Ali, N.**, Siddiqui, H. M. A., Qureshi, M. I., Abdalla, M. E. M., EL-Gawaad, N. A., & Tolasa, F. T. (2024). On Study of Multiset Dimension in Fuzzy Zero Divisor Graphs Associated with Commutative Rings. *International Journal of Computational Intelligence Systems*, 17(1), 298 **(Q2, IF: 3.0)**
4. **Ali, N.**, Siddiqui, H.M.A.; Qureshi, M.I.; Abdallah, S.A.O.; Almahri, A.; Asad, J.; Akgül, A. Exploring Ring Structures: Multiset Dimension Analysis in Compressed Zero-Divisor Graphs. *Symmetry* **2024**, 16, 930. <https://doi.org/10.3390/sym16070930> **(Q2, IF: 2.2)**
5. **Ali, N.**, Sadiqa, A., Shahzad, M. A., Imran Qureshi, M., Siddiqui, H. M. A., ABDALLAH, S. A. O., & El-Gawaad, A. Secure Communication in the Digital Age: A New Paradigm with Graph-Based Encryption Algorithms. *Frontiers in Computer Science*, 6, 1454094.

6. Raji, T., [Ali, N.](#), Qousini, M., Hanchalu, G., Tolasa, F. T., & Seboka, B. (2024). Exploring α - ψ - ϕ contractive mapping: novel fixed point theorems in complete b-metric spaces. *F1000Research*, 13, 566. **(X, Q2, IF: 0.2 — Corresponding Author)**
 7. Shahzad, M. A., [Ali, N.](#), Abdallah, S. A. O., & EL-Gawaad, N. A. (2024). On Study of Some Bounds for Fault-Tolerant Metric Dimension and Adjacency Fault-Tolerant Resolving Set of Corona Product Graphs. *Discrete Mathematics, Algorithms and Applications*. **(X, Q3, IF: 0.4 — Corresponding Author)**
 8. Sarker, M. S., Alam, M. M., Jiao, C., Shuqi, W., Xiaohui, L., [Ali, N.](#), ... & Alshehri, A. A. (2025). Maximizing polyphenol yield: ultrasound-assisted extraction and antimicrobial potential of mango peel. *Preparative Biochemistry & Biotechnology*, 55(3), 349-358. **(W, Q3, IF: 1.5 — Corresponding Author)**
 9. Jeeva, N., Dharmalingam, K. M., [Ali, N.](#), Sayed-Ahmed, M. Z., Radwan, R. M., El-Bahkiry, H. S., ... & Tolasa, F. T. (2024). Epidemiology simulation: numerical techniques for analyzing type 2 diabetes model and its prevention measures. *Commun. Math. Biol. Neurosci.*, 2024, Article-ID. **(X, Q4, IF: 0.2 — Corresponding Author)**
 10. Dharmalingam, K. M., Jeeva, N., [Ali, N.](#), Al-Hamido, R. K., Fadugba, S. E., Malesela, K., ... & Qousini, M. (2024). Mathematical analysis of Zika virus transmission: exploring semi-analytical solutions and effective controls. *Commun. Math. Biol. Neurosci.*, 2024, Article-ID. **(X, Q4, IF: 0.2 — Corresponding Author)**
 11. [Ali, N.](#), Kousar, Z., Safdar, M., Safdar, J., & Tolasa, F. T. (2024). A mathematical analysis of concealed non-Kekulean benzenoids and subdivided networks in associated line graphs. *Acadlore Trans. Appl Math. Stat*, 2(2), 72-80. **(Non Indexed — Impact Factor: N/A)**
 12. [Ali, N.](#) (2024). Algorithm for Visualization of Zero Divisor Graphs of the Ring $\mathbb{Z}_n$ Using MAPLE Coding. *Open Journal of Discrete Mathematics*, 14(1), 1-8. **(Non Indexed — Impact Factor: N/A)**
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2023

1. Safdar, M., Mushtaq, T., Ali, N., & Akgül, A. (2024). On study of flow features of hybrid nanofluid subjected to oscillatory disk. *International Journal of Modern Physics B*, 38(26), 2450356. **(W, Q1, IF: 2.5)**
 2. [Ali, N.](#), Kousar, Z., Safdar, M., Tolasa, F. T., & Suleiman, E. (2023). Mapping connectivity patterns: Degree-based topological indices of corona product graphs. *Journal of Applied Mathematics*, 2023(1), 8975497. **(X, Q2, IF: 1.5)**
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2020

1. Mahboob, A., Hussain, T., Akram, M., Mahboob, S., [Ali, N.](#), & Raza, A. (2020). Characterizations of chevalley groups using order of the finite groups. *Journal of Prime Research in Mathematics*, 16(1), 46-51. **(X, Q4, Impact Factor: N/A)**

Accepted Articles:

1. On the Extremal Characterization of Families of graphs and their transformations Via Harmonic Index (*Journal of Algebraic Systems*)

Submitted Articles:

1. Outer Multiset Dimension and Graph-Theoretic Properties of Unit Graphs of Rings (**Journal of Algebra and Its applications**)
2. Graph-Theoretic Characterization of Rings: Outer Multiset Dimension of Extended Zero-Divisor Graphs (**Annals of Combinatorics**)
3. Structural and Spectral Properties of Compressed Zero Divisor Graphs Associated with Commutative Rings (**Discrete Mathematics**)
4. Metric Dimension Analysis of Polythiophene and Backbone DNA Networks: A Graph-Theoretic Perspective (**Scientific Reports**)
5. Comprehensive Analysis of Metric Dimension in Concealed Non-Kekuléan Benzenoid Hydrocarbon and Subdivided Bakelite Networks (**Journal of Computational Mathematics**)
6. Uniquely Identifying the Vertices of Concealed Non-Kekuléan Benzenoid Hydrocarbon and Subdivided Network's Line Graph (**Scientific Report**)
7. Graph-Theoretic Characterization of Chemical Networks via Edge Metric Dimension (**Scientific Reports**)
8. An Integrated 3D Topological and Python Regression Approach to Enhance QSPR Modeling for Anti-Diabetic Drug Discovery (**Journal of Applied Mathematics**)
9. Topological Energy-Based Modeling of DNA Nucleobases via Python for the Prediction of Physicochemical Properties (**Journal of Mathematics**)
10. Computational QSPR of Neurotransmitters with Distance Based Topological Metrics (**Discrete Mathematics**)
11. Energies and Molecular Modeling of Antiviral Drugs Against SARS-CoV-2 (**Scientific Reports**)
12. The Extremal Characterization of Graphs and Transformed Family of Graphs Using Sum Connectivity Index (**DMAA**)
13. A Study of Peripherality and Distance-Based Topological Indices in Generalized Cactus Graphs (**DMAA**)
14. Refutation of Graph Energy Conjecture: Mathematical Bounds and Structural Insights (**International Journal of Applied and Computational Mathematics**)
15. Cryptographic Advances: Integrating Graph Theory with Matrix-Based Security (**The Journal of Supercomputing**)
16. Applications of Graph Transformations in Cryptography: A Secure Encoding Framework for Data Communication (**The Journal of Supercomputing**)
17. Innovative Encryption Techniques Using Graph Theory and Matrix Transformations for IoT and Embedded Systems (**The Journal of Supercomputing**)
18. Exploring Molecular Connectivity: A Comprehensive Analysis of the Neighborhood ABS Index in Benzenoid Hydrocarbons and Dendrimers (**Scientific Reports**)

➤ Research Student List.

MS Mathematics Supervision

Vehari, Pakistan

- i. Mubarrah Tariq (Topic: Roman Domination parameters in Zero divisor graphs) 2025-Present

Final Year Research Project Supervision

Vehari, Pakistan

- ii. Mubarrah Tariq and Shrish Riaz (Topic: On dominant metric dimension of graphs) 2022-2023
- iii. Riffat Nazir and Nabeela Zulfiqar (Topic: Studying algebraic structures) 2022-2023
- iv. Rimsha Munir and Ruqayya Bibi (Topic: Zero divisor graphs and their properties) 2022-2023
- v. Gulam Yaseen and M. Asif (Topic: Study of Compressed zero divisor graphs) 2023-2024
- vi. Samiya Yaseen, M. Irfan and Iqra Batool (Topic: A Survey on zero divisor graphs) 2023-2024
- vii. Ayesha Sadiqa and M. Amir (Topic: Cryptography with the help of graphs) 2023-2024
- viii. Gulam Yasin and M. Asif (Topic: Dominant metric dimension in CZDG) 2023-2024

ix.	Mazhar Ahmad and M. Touseef Haider (Topic: Graph Based Cryptography)	2024-2025
x.	Muhammad Irfan and Abid Hussain (Topic: Matrix Based Cryptography)	2024-2025
xi.	Iqbal Batool and Nusrat Bibi (Topic: Graph and Matrix Based Cryptography)	2024-2025
xii.	Ezza Shehzad and Fatima Parveen (Topic: RSA Based Cryptography)	2024-2025
xiii.	M. Faheem (Topic: Domination in Fuzzy Graphs)	2024-2025
xiv.	M. Ramzan, Yousuf & Saeed (Topic: Graph based Cryptography)	2025-2026
xv.	Minahil and Aiman (Topic: Matrix based Cryptography)	2025-2026

➤ Courses Taught

- Abstract Algebra
- Functional Analysis
- Ring Theory
- Calculus-I
- Set Topology
- Introduction to algebraic systems

➤ Honors and Awards

Online Talk at ICPAM

- 2nd International Conference on Pure and Applied Mathematics (ICPAM). Riyadh, Saudi Arabia

Feburary-2026

Talk Invited Speaker

- 2 Days Workshop: Statistics for life applying, Statistical Analysis Everyday Scenarios. Burewala, Pakistan

December-2025

Online Talk at ICMADS'25

- The First International Conference on Mathematics and Applied Data Science. Konya, Türkiye

August - 2025

4- Day International School Attendee

- Attended 4-Day International School on Algebraic Geometry: New Trends in Computational Algebraic Geometry and Its Applications held at Abdus Salam School of Mathematical Sciences (ASSMS), Government College University, Lahore.

Vehari, Pakistan

Lahore, Pakistan

Principal Organizer

- One day Symposium on Pure and Applied Mathematics

UE Vehari

April - 2019

➤ Extracurricular & Volunteer Experience

Member of Committees

CUI, Pakistan

- Member/Secretary Character building society
- Member Health awareness and blood donor society
- Member Career counselling cell
- Member job fair committee
- Departmental editor for Newsletter
- Member/Secretary Departmental admission committee
- Convener Departmental Cricket Team
- Campus game in charge Lawn Tennis (Male)

ACADEMIC SCHOLARSHIPS

- Received Yearly merit-based academic scholarship from University of Education.

Vehari, Pakistan

2014-2018

ONLINE COURSES

- Training Certificate in Digital Literacy and Freelancing

Vehari, Pakistan

2019-2020

EDITORIAL POSITION

- Global Integrated Mathematics (Academic Editor) 2025- Present
- Special Issue Editor (Mathematical Modelling, Artificial Intelligence, and Computational Approaches in Chemical Engineering and Chemistry): Journal: Applied Chemical Engineering (ACE) 2025-2026

JOURNALS REVIEWER

- European Journal of Pure and Applied Mathematics International
- Chaos Theory and Applications International
- Ain Shams Engineering Journal International
- Heliyon International
- AIMS Mathematics International
- Alexandria Journal of Engineering International

– Journal of Applied Mathematics	International
– Asian-European Journal of Mathematics (AEJM)	International
– Information Science	International
– Physica Scripta	International
– Multimedia Tools and Applications	International
– Discrete Mathematics, Algorithms and Applications (DMAA)	International
– Neural Computing and Applications (NCAA)	International
– Applied soft computing	International
– American Journal of Mathematical and Management Sciences	International
– Computer Methods in Biomechanics and Biomedical Engineering	International
– Journal of Intelligent & Fuzzy Systems	International
– Mathematical Reviews	International
– Results in Control and Optimization	International
– New Mathematics and Natural Computation (NMNC)	International

AWARDS AND CERTIFICATIONS

– E-Rozgar Graphic Designing Graduation certificate	2021
– Received Certificate of Recognition presented to LSBE Graduate (Life skill-based education)	2010
– Received merit-based Laptop Award from Chief Minister Punjab	2016
– Received Excellence certificate, 2 nd position in Chief Minister’s speech contest.	2008