NOTIFICATION

Ms. Sofia, Ph.D. Research Scholar has submitted thesis on "Development of New Efficient Life-Time Probability Distributions and their Applications" to the University of Peshawar, in partial fulfillment of the requirements for the award of degree of Doctor of Philosophy (Ph.D.) in Statistics

The oral examination (Public Defence) is scheduled to be held on October 17th , 2025 at 09.00 a.m. in the Department of Statistics, University of Peshawar. The abstract of the thesis is attached herewith.

All those interested in the said research work may participate in the event. They may raise relevant questions during presentation by the scholar for further evaluation.
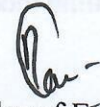
Addl:Controller of Examinations
University of Peshawar

No: 4424-38/Ph.D./Exams.

Dated: 13.10.2025.

Copy for information to:
1. The Director (Statistics) Higher Education Commission, Islamabad
2. The Deans of Faculties
3. The Heads of Post-Graduate Departments/Centers/Institutions/Colleges
4. The Chairman Department of Statistics for necessary arrangements.
5. The Director Admissions
6. The Director Advanced Studies and Research
7. The Director Quality Enhancement
8. The Director Office of Research, Innovation, & Commercialization
9. The Director Information, Govt. of Khyber Pakhtunkhwa, Peshawar
10. The Director Pakistan Broadcasting Corporation, Peshawar
11. The General Manager Pakistan Television Corporation, Peshawar
12. The Station Director Geo, Aaj, ARY and Sama TV
13. The Bureau Chief, Daily The News, Dawn, Aaj & Mashriq
14. The Media Officer
15. The Incharge Campus Radio Station
16. The Director C.I.T.S
17. Ms. Sofia, Ph.D. Research Scholar, Department of Statistics
18. PS to Vice-Chancellor
19. PS to Registrar
20. PS to Controller of Examinations

With the request to widely publicize the event

Addl: Controller of Examinations
University of Peshawar

Development of New Efficient Life-Time Probability Distributions and Their Applications

ABSTRACT

In many scientific disciplines such as social and natural sciences, engineering, computer science, and even in survival analysis, lifetime distributions exhibit a dynamic role in describing real-world phenomena. In relation to this, numerous distributions have been developed and studied to address certain problems in existing distributions. Some well-known examples are Exponential Distribution (ED), Weibull Distribution (WD), Rayleigh Distribution (RD), and Pareto Distribution (PD). Although existing life-time distributions perform well, greater flexibility in the distribution is needed to accommodate more complex data.

To handle such data sets more efficiently, some new models are developed in this study. This study introduces three important distributions known as Exponent Beta Pareto (EBP) distribution, Exponent Beta Exponential (EBE) distribution and Exponent Beta Frechet (EBF) distribution. The first three proposed models have been derived on the basis of Exponent Beta technique. Numerous mathematical properties including Order Statistics (OS), Moment Generating Function (MGF), Mean Residual Life Function (MRLF), Mean Waiting Time (MWT), Stress Strength Parameter (SSP), Renyi Entropy (RE) and Shannon Entropy (SE) of the proposed distributions are obtained. To obtain parameter estimates, the technique of MLE technique is adopted. Furthermore, two sets of data and simulation results are utilized to assess the significance of the suggested distributions as compared to other competitive models. It has been observed that proposed models shows better performance. In this study a new method termed as Exponent Beta (EB) has also been developed and is used to propose a new family of efficient life time models by introducing an additional shape parameter in the existing models.