



COEP Technological University

(COEP Tech)

A Unitary Public University of Government of Maharashtra

w.e.f 21st June 2022

(Formerly College of Engineering Pune)

Syllabus of Ph.D Research Program Eligibility Test (RPET)

- All questions shall be multiple choices and no negative marking system.
 - COEP Technological University will issue a separate certificate for the result of RPET Test.
 - Duration of RPET Test is 2 hours
 - Max Marks-70
1. **Data Analysis:** Data Preparation –Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis –Cross tabulations and Chi square test including testing hypothesis of association, Analysis of Variance (ANOVA)
 2. **Statistics:** Measures of central tendency – Mean, Median and Mode, Measures of dispersion - Mean deviation, Standard deviation, Moments, Skewness and Kurtosis, Correlation and Regression
 3. **Probability:** Sample space, Classical definition of probability and Axiomatic approach of probability, Addition theorem on probability, Conditional probability, Multiplication theorem on probability and Baye's theorem, Binomial, Poisson and Normal distributions
 4. **Differential Equations:** Definition and basic concepts such as order, degree of a differential equation, Ordinary differential equation of first order, Linear differential equation of nth order with constant coefficients
 5. **Matrices:** Definition of a matrix, types of matrices, Algebra of matrices, Inverse of a matrix by Adjoint method and by Elementary transformation, Rank of a matrix, Solution of system of Linear homogeneous and non-homogeneous equations, Eigen values, Eigen vectors
 6. **Computer Fundamentals:** 'C' Programming Language, System software, Application software, Operating Systems, Basics of Internet, Browsers, Search Engines.

Reference Books:

1. Ronald E, Walpole, Sharon L. Myers, Keying Ye, Probability and Statistics for Engineers and Scientists (8th Edition), Pearson Prentice Hall, 2007
2. Erwin Kreyszig, Advanced Engineering Mathematics (10th Edition) Wiley eastern Ltd.