Department of Physics and Astronomical Science
Central University of Himachal Pradesh

Syllabus for the PhD Screening/ Entrance Test

Section A (Physics): 50 Marks

The syllabus for this section is same as of CSIR-UGC National Eligibility Test (NET) for Junior Research Fellowship and Lecturer-ship Examination. The details of which are available at:

http://csirhrdg.res.in/mcs_ph_sylbs.pdf

Section B (Research Methodology): 50Marks

Data Analysis and Interpretation, Uncertainties in Measurements: Measuring Errors, Uncertainties, Parent and Sample Distributions, Mean and Standard Deviation of Distributions, Binomial Distributions, Poisson Distribution, Gaussian or Normal Error Distribution, Lorentzian Distribution; Approximation and Errors in Computing: Significant Digits, Numerical Errors, Modelling errors, Conditioning and Stability, Convergence of Iterative Processes.

Error Analysis: Instrumental and Statistical Uncertainties, Propagation of Errors, Application of Error Equations, method of Least squares, Statistical Fluctuations, Probability Tests, χ^2 -test of a distribution.

Curve fitting (Regression Analysis); Least square Fit to a Straight line, error estimation of the fitted parameters, limitations of the least square method, Least squares fit to a polynomial, matrix solution, Goodness of a fit, Linear Correlation Coefficient, Multivariable Correlations.

Numerical solutions of Transcendental Equations and Ordinary Differential Equations, Runge-Kutta Methods.