

## Research Methodology Syllabus for PhD. Pre-Qualifying Entrance Examination

### Computer Science

**Research and Types of research:** Meaning of Research- Objectives of Research- Motivation in Research. Research methods vs Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical. Research Process. Criteria of good Research.

**Research Formulation:** Defining and formulating the research problem - Selecting the problem Necessity of defining the problem - Importance of literature review in defining a problem

**Literature review:** Primary and secondary sources – reviews, treatise, monographs-patents – web as a source – searching the web - Critical literature review –Identifying gap areas from literature review

**Development of working hypothesis:** Data Collection and analysis: Execution of the research - Observation and Collection of data - Methods of data collection – Modeling, Mathematical Models for research, Sampling Methods

**Data processing and Analysis:** Strategies. Data Analysis with Statistical Packages – Hypothesis-testing, Generalization and Interpretation.

#### Reference Books:

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.
3. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, Ess Ess Publications. 2 volumes. 4.
4. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p.
5. Wadehra, B.L. 2000. Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.
6. Leedy, P.D. and Ormrod, J.E., 2004 Practical Research: Planning and Design, Prentice Hall.
7. Satarkar, S.V., 2000. Intellectual property rights and Copy right. Ess Ess Publications