

## PAPER – I (COMPULSORY)

### CW 01: RESEARCH METHODOLOGY AND COMPUTING

#### UNIT – I

**Research concept:** Introduction of Research methodology, nature, concept, objective and scope of research; Research motivation; Types and method of research; Concepts of abstract, review of literature. Quantitative and qualitative research.

#### UNIT – II

**Research problem and design:** Research problem – Identification, selection and its formulation; Research design – Components, materials, hypothesis and its importance; Research journals and research articles, Research project. Criteria of good research. Script Writing, Challenges and opportunities for good research in India.

#### UNIT – III

**Research ethics:** Basic concepts and issues, Institutional ethics, Intellectual property rights (IPR), Patents, copy right, Plagiarism, cyber laws, Impact factor, Citation, i10-index, h-index, Reference style, Journal Citation report (JCR), peer review process, referred journal, journal index database, preparation of manuscript.

#### UNIT – IV

**Quantitative data analysis:** Types and classification of data, Data collection and representation, tabulation, Sampling methods and size of samples, Central tendency, Standard deviation and error, Probability, Normal and Binomial distribution, Test of significance (t-test, F-test and Chi-square test), basic ANOVA, Correlation and regression.

#### UNIT – V

**Computer fundamentals:** Introduction, Software and Hardware; MS-Word, MS-Excel and MS-Power point. Document preparation system: La-Tex, PDF, Basics of computer Network and Internet, Data analysis and graph/ chart designing and preparing using specific software, Search engines. Google scholar, online paper submission system like Easy chair. Basic introduction of SPSS and MATLAB.

#### Books suggested –

1. Research methodology- Methods and Techniques (3/e): C. K. Kothari (2008), New Age International, New Delhi
2. Research Methodology: R. Panneerselvam (2<sup>nd</sup> Edition), PHI learning publication, India.
3. Research methodology in Behavioral Sciences (English and Hindi), S. K. Mangal, S. Mangal, PHR Learning publication, India.
4. Computer Fundamentals Architecture and organization by B.Ram and Sanjay Kumar, New Age International Publisher.
5. 2007 Microsoft Office System Step by step by Cox, Joyce etc. All, PHI Learning India.
6. Bio-statistical Analysis (5<sup>th</sup> /6<sup>th</sup> Edit.): Jerrold H. Zar, Pearson Education.
7. Experimental design: W. G. Cochran and M. G. Cox, John Wiley & Sons Publication, New Delhi.
8. Plagiarism: Why it happens, How to prevent it? – B. Gilmore.
9. Microsoft Office 2010: Introductory concepts and Techniques: G.B. Shelly & T.J. Cashman.
10. Design and analysis of experiments (5/e): Montgomery and Douglas (2007), Wiley Publication.

➤ *Any other books suggested by Course coordinator/ Course Teacher/ Supervisor concerned may be applied.*

**PAPER – III (COMPULSORY)**  
**CW 03: REVIEW OF LITERATURE AND PRESENTATION**

**Part – A (50 Marks)**

**Review of Literature:**

Writing of literature in the area of the proposed research work under Ph. D. program.

- It should be standard review comprises minimum fifty research articles belonging to peer reviewed journals (National and International).
- Candidate has to submit a report of reviewed literature in printed form to the department concerned at the time of presentation.

**Part – B (50 marks)**

**Presentation:**

- Seminar based on the review of literature with the help of PPT.

\*\*\*

Signature (s) -