

Course Work
For
Ph. D. in
(a) Physics
(b) Electronics

Paper:
Research Methodology

Max. Mark: 70 (Theory)
30 (Sessional)

Basic Concept: Meaning, Objective, motivation, type of research, recent approaches, significance of research, research methods and methodology, research process, criterion for good research, outcomes of research.

Research Problem: Definition, selection of problem, necessity of defining the problem, techniques involved in defining a research problem, different ways of literature survey, different methods of data collection, methods of analysis and Interpretation of finding.

Research Design: Meaning and need of research design, development of research plan, Research report components in the paper, writing the references/Bibliography/~~paper~~ ^{writing} research paper.

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Basic Concept of Physics/Electronics: Crystallography, bonding in solids, X-Ray Diffraction, Basic idea of conductor/semiconductor and semiconductor devices, various analog and digital electronic circuits, modelling and Simulation, Simulation techniques and tools/superconductivity, ^{lom} Ceramics/liquid crystals/Antenna/optical fiber/nano-composites/^{lom} Thin films/^{lom} Bulk material Preparation, synthesis and their characterization techniques. Measuring instruments like X-Ray diffractometer, scanning electron microscope, UV spectrophotometer (R-T measurement, Dielectric constant measurement), Hazardous Laboratory Materials/chemicals and Bio-safety measures.

References:

1. Kothari C. R., "Research Methodology: Methods and Techniques", New Age International. Publication, New Delhi
2. Muhammad H. Rashid, Introduction to Pspice using OrCAD for circuits and electronics, Pearsion Education.
3. Any other reference work as suggested by teacher.

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