

BHARATI VIDYAPEETH UNIVERSITY, PUNE

PhD Entrance Test – 2017

Syllabus

**SECTION-I: Research Methodology**

**\*The syllabus of Research Methodology will be common for all the subject except Law**

| Syllabus   |  |
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| <b>Introduction to Research</b> : The concept of research, characteristics of good research, Application of Research, Meaning and sources of Research problem, characteristics of good Research problem, Research process, outcomes, application of Research, Meaning and types of Research hypothesis, Importance of Review of Literature, Organizing the Review of Literature.   |  |
| <b>Types of Research</b> : Types of research, pure (basic, fundamental) and applied research, qualitative and quantitative.  |  |
| <b>Research Design</b> : Meaning, need, types of research design – Exploratory, Descriptive, Casual research Design, Components of research design, and Features of good Research design. Experiments, surveys and case study Research design.   |  |
| <b>Sampling, Data Collection and analysis</b> : Types and sources of data – Primary and secondary, Methods of collecting data, Concept of sampling and sampling methods – sampling frame, sample, characteristics of good sample, simple random sampling, purposive sampling, convenience sampling, snowball sampling, classification and tabulation of data, graphical representation of data, graphs and charts – Histograms, frequency polygon and frequency curves, bell shaped curve and its properties.<br>Statistical Methods for Data Analysis : Applications of Statistics in Research, measures of central tendency and dispersion |  |
| <b>Research Report</b> : Research report and its structure, journal articles – Components of journal article. Explanation of various components. Structure of an abstract and keywords. Thesis and dissertations . components of thesis and dissertations. Referencing styles and bibliography.  |  |
| <b>Ethics in Research</b> - Plagiarism - Definition, different forms, consequences, unintentional plagiarism, copyright infringement, collaborative work. Qualities of good Researcher.  |  |
| <b>ICT Tools for Research</b> : Role of computers in research, maintenance of data using software such as Mendeley, Endnote, Tabulation and graphical presentation of research data and software tools.  |  |
| <b>Web search</b> : Introduction to Internet, use of Internet and WWW, using search engines and advanced search tools.   |  |

## RECOMMENDED BOOKS

|   |                                       |   |
|---|---------------------------------------|---|
| 1 | Donald Cooper and PS Schindler (2009) | Business Research Methods, 9th edition, Tata McGraw Hill. |
| 2 | Kothari C. R                          | Research Methodology                                      |
| 3 | Uma Sekaran (2010)                    | Research Methods for Business, 4th edition, Wiley.        |
| 4 | Ranjit Kumar (2009)                   | Research Methodology, 2nd edition, Pearson Education      |
| 5 | Naresh Malhotra and S Dash (2009)     | Marketing Research, 5th edition, Pearson Prentice Hall.   |
| 6 | Michael V. P                          | Research Methodology.                                     |
| 7 | Fred N. Kerlinger :                   | Foundations of Behavioral Research.                       |

**BHARATI VIDYAPEETH DEEMED UNIVERSITY**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**Ph. D. Entrance Test Syllabus**

**Specific Subject: Civil Engineering**

**Topics covered**

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| <b>UNIT-I</b>   | <b>Hydraulics Engineering :</b><br>Laminar and Turbulent fluid flow , Uniform and Non uniform flow in open channels , Hydraulic turbines-Francis ;Kaplan and Pelton turbines, Reservoir planning, Hydrology-rainfall ; runoff ; unit hydrograph theory ,Gravity and earth dams.  |
| <b>UNIT-II</b>  | <b>Structural Engineering:</b><br>Types, properties and testing of concrete; Analysis of statically determinate beam, Shear Force and Bending Moment diagram; Deflection of beam; Buckling of axially loaded column; Influence line diagram; Stress, Strain, Stresses due to axial, bending, shear.  |
| <b>UNIT-III</b> | <b>Environmental Engineering:</b><br>Water Demand and quality. Common impurities and their effects, drinking water Standards ,different treatment methods and flow sheets, advanced treatment methods, Waste water characteristics ,treatments and methods of design, low cost waste water treatment methods and design, effluent standards.     |
| <b>UNIT-IV</b>  | <b>Geotechnical Engineering :</b><br>Index properties of soil, soil structure, permeability, Seepage analysis, Site explorations& Investigations, Methods of soil exploration, Terzaghi's bearing capacity analysis, Effect of water table on bearing capacity of soil ,Pile foundations ,negative skin friction, pile group and its efficiency. |
| <b>UNIT-V</b>   | <b>Planning and Construction:</b><br>Project Planning, CPM, PERT, Resource leveling, Project feasibility analysis, Estimation of quantities , Rate Analysis<br>Traffic planning theory ,Traffic control and management, Highway alignment and Geometric Design   |

**Text Books/References:**

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| 1. | Fluid Mechanics,White Tata McGraw Hill  |
| 2. | Open Channel Flow-Hanif Chowdhary   |
| 3. | S.Crandall, N.Dahl and T.Lardner-Mechanics of Solids McGrew-Hill publications |
| 4. | Hibbeler R. C., "Structural Analysis", Prentice Hall Publication              |
| 5. | Waste water Treatment and Reuse:Metcalfe and Eddy.                            |
| 6. | Bowles JE(1996),Foundation Analysis and Design,McGraw Hill                    |
| 7. | Das.B.M(1997),Advanced Soil Mechanics,Taylor and Francis                      |