

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	
Introduction to Research : 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.	
Types of Research : Types of research, pure (basic, fundamental) and applied research, qualitative and quantitative.	
Research Design : 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.	
Sampling, Data Collection and analysis : 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. Statistical Methods for Data Analysis : Applications of Statistics in Research, measures of central tendency and dispersion	
Research Report : 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.	
Ethics in Research - Plagiarism - Definition, different forms, consequences, unintentional plagiarism, copyright infringement, collaborative work. Qualities of good Researcher.	
ICT Tools for Research : Role of computers in research, maintenance of data using software such as Mendeley, Endnote, Tabulation and graphical presentation of research data and software tools.	
Web search : 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:-Electronics Engineering

Topics covered

UNIT-I	Signals and Systems: Linear Algebra, Calculus, Differential Equations, Complex variables, Continuous and Discrete Time Systems, z-transforms, Continuous and Discrete time Fourier transforms, Continuous and Discrete time Fourier series, Random signal and noise.
UNIT-II	Analog and Digital Electronics: Diode Circuits, Basic BJT and FET circuits, Amplifiers, Op Amps, Integrated Circuits, Number System and Boolean Algebra, Combinational Logic Circuits, Sequential Circuits, Digital Systems.
UNIT-III	Network Theory and Control System: Circuit Theorems, RLC circuits, Solution of network equations using Laplace transform, Two port networks, Frequency response, Transfer functions, Stability, Time response, Frequency domain analysis, LTI control systems.
UNIT-IV	Micro controllers and Embedded system: Architecture of Micro controller, Memory organization, Interrupt structures for PIC microchip 16F, 18F series.
UNIT-V	Analog and Digital Communication: Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis of these operations, Fundamentals of AM/FM/PM, Digital communication systems: pulse code modulation (PCM), differential pulse code modulation (DPCM), digital modulation schemes: amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK), Basics of TDMA, FDMA and CDMA and GSM.

Text Books/References:

1.	S K Mitra, Van Nostrand Reinhold, DSP: A computer- based approach, TMH
2.	John G Proakis and Dimitris. G. Manolakis, Digital Signal Processing, Prentice Hall of India, 1997
3.	Duda R.O. and Hart P.E., John, Pattern Classification and Scene Analysis, Wiley Interscience, 1973.
4.	R.C. Gonzalez and P. Wintz, Digital Image Processing, Addison Wesley, 2nd Ed, 1987
5.	Rosenfeld and A. C. Kak, Digital Image Processing Academic Press, Vol-1, 1982.
6.	Douglass BP, Real time UML: Developing Efficient Objects for Embedded Systems, Addison Wesley, 2000
7.	A.S. Taanenbaum, Computer Networks, PHI/PEA, 4th Ed, 2003
8.	Douglas Comer, DL Stevens, Internetworking with TCP/IP, Vol III, PEA, 2nd Ed, 1996 .
9.	Garg V, Joseph E. Wilkes, Wireless & Personal Communication Systems, Feher/Prentice Hall.

10.	R. S. Khandpur, Handbook of Biomedical Instrumentation, McGraw Hills.
11.	Timothy J Ross, Fuzzy logic with Engineering Applications, McGraw Hills, 1997.
12.	Mehrotra, Mohan, Ranka, Elements of Artificial Neural Networks, MIT Press, 1997.
13.	Munakata, Fundamentals of New Artificial Intelligence, Springer Verlag, 1998
14.	F.O Karray, CW DeSilva, Soft Computing & Intelligent Systems, Addison Wesley, 2005
15.	D. L. Perry, 'VHDL', Mc Graw Hill Inc., 1998.
16.	Frank Vahid and Tony Givargis, "Embedded system design: unified hardware/software introduction", John Wiley & Sons, 2002.
17.	Neil Weste, David Harris, "CMOS VLSI Design: A circuit and system perspective," 4th edition, Person Publication.
18.	Myer Kutz, "Standard Handbook of Biomedical Engineering Design", MGH.
19.	Webster, "Encyclopedia of Medical Devices and Instrumentation", Wiley Interscience
20.	Andrew Sloss, Dominic Symes, Chris Wright, " ARM system developer's guide Designing and optimizing System software, Morgan Kaufmann Publishers, 2010.
21.	Robert Ashby, "Designers guide to Cypress PSoC", Elsevier Publications.
22.	Kaushik Roy, Sharat Prasad, Low Power CMOS VLSI Design., John Wiley and Sons.
23.	Aswin Sreedhar, Sandip Kundu, Nanoscale CMOS VLSI Circuits Design for Manufacturability , MGH.
24.	Erwin Kreyszig, Advanced Engineering Mathematics, Laurie Rosatone
25.	Vijay Garg, Wireless communication and networking, Morgan Caufmann
26.	William Stallings, Wireless Communications and Networks, PHI
27.	B. V. Ramna, Higher Engineering, Tata McGraw Hills