THIRUVALLUVAR UNIVERSITY
VELLORE – 632115

CENTRE FOR RESEARCH
SYLLABUS FOR COMMON ENTRANCE TEST OF M. PHIL AND PHD

INFORMATION TECHNOLOGY

Unit – 1

Spectral Analysis and Random Variable Process, Analog Modulation Systems, Base Band Data Communication, Digital Modulation, Spread Spectrum Techniques.

Unit -2

C++ Programming, Inheritance and Polymorphism, Java Programming, Exception Handling, I/O and JDBC: Fundamental exception types, uncaught exceptions, throw, throw final, built in exception, creating our own exceptions.

Streams, Byte and Character stream, Predefined streams, Reading and Writing from Console and Files, Buffered Reader and Writer, Serialization.

JDBC Basics, JDBC Drivers, Connecting to Database and accessing databases., Interfaces, Packages and Threads :Interface – Extending Interface – Implementation Interfaces – Accessing Interface variables – Java API packages – Creating Packages –Accessing and using packages – Creating Threads – Extending the thread class – Stopping and blocking a thread – Thread priority – Synchronization.

Unit- 3

Concepts For Object-Oriented Databases, Functional Dependencies and Normalization for Relational Database: Informal Design Guidelines for Relational Schemas - Functional Dependencies - Normal Forms Based, Database System Architecture and The System Catalog, Concurrency Control Techniques , Enhanced Data Models for Advanced Applications.

Unit -4

Introduction to windows Programming, Visual Basic Program – Form Design – VBX control – Properties – Event procedures – Menus and Toolbars – Using Dialog Boxes – Working with control Arrays – Active X controls – Multiple Document Interface (MDI) – File System Controls – Data Control – Database Applications, Visual C++ Programming, Database Connectivity, Basics of GUI Design.

Unit -5

Introduction : Applications of Computer Network - Hardware and Software - Protocol Hierarchies - Design Issues of the layers - Interfaces and services - Service Primitives - Reference Models : The OSI Reference model-The TCP/IP Reference Model -Types of computer Network : LAN,MAN,WAN- Topologies - Transmission Media - Concept of data transmission - Switching Techniques - ISDN and ATM, Data Link Layer, Network Layer, Transport Layer, Presentation and Application Layer.

Unit – 6

Introduction: Introduction to the Internet and World Wide Web - World Wide Web Consortium (W3C) - History of the Internet History of the World Wide Web - History of SGML -XML

Introduction to HyperText Markup Language - Editing HTML - Common Elements - Headers - Linking - Images - Unordered Lists - Nested and Ordered Lists - HTML Tables-Basic HTML Forms, Dynamic HTML, JavaScript: JavaScript, Introduction to Scripting, Control Statements, Functions, Arrays, Objects, XML, PERL, CGI AND PHP: Perl - String Processing and Regular Expressions - Form Processing and Business Logic - Server-Side Includes - Verifying a Username and Password - Using DBI to Connect to a Database - PHP - Form Processing and Business Logic - Connecting to a Database - Dynamic Content in PHP.

Unit – 7

INTRODUCTION : Mobile and Wireless Devices – Simplified Reference Model – Need for Mobile Computing – Wireless Transmissions – Multiplexing – Spread Spectrum and Cellular Systems – Medium Access Control – Comparisons, Telecommunication Systems, Wireless Lan, Mobile IP, Wireless Application Protocol.

Unit – 8

Introduction and Hardware: Representative uses of computer graphics - vector display and raster display architectures - display processor - interactive input devices - output primitives - software portability and graphics standards - conceptual framework for interactive graphics.2D graphics, 3D graphics, Introduction: Elements of multimedia systems - Multimedia Hardware - Storage for Multimedia - Input, Output and Communication devices., Multimedia Building Blocks.

Unit-9

Introduction – Product Life – Project life cycle models - water fall model – Prototyping model – RAD model – Spiral Model – Process Models – Metrics, Software Configuration Management, Project initiation, Software requirements gatheringProject Management in testing phase – in the maintenance phase – Impact on internet on project Management.

Unit – 10

Introduction: Attacks - Services - Mechanisms - Conventional Encryption - Classical and Modern Techniques - Encryption Algorithms - Confidentiality. Public Key Encryption: RSA - Elliptic Curve Cryptography - Number Theory Concepts. Message Authentication: Hash Functions - Digest Functions - Digital Signatures - Authentication Protocols. Network Security Practice: Authentication, Applications - Electronic Mail Security - IP Security - Web Security. System Security: Intruders - Viruses - Worms - Firewalls Design Principles - Trusted Systems.