Syllabus of BCA SIXTH Semester Course

The course will consists of Four Theory Papers of 80 marks each and Two Project Papers of 100 marks for which there will be University examinations. Other than the Internal evaluation for each Theory Paper which will be of 20 marks and will be evaluated on the basis of classroom performance and Internal examination.

The students will be required to answer Five Questions out of which one will be objective and compulsory, where the paper consists of more than one group the students, will be required to answer at least one question from each group.

BCA – 601 : Data and Computer Communication

Data Communications : Data Transmission, Transmission Media, Data Encoding, The Data Communication Interface, Data Link Control, Multiplexing.

Wide Area Network : Circuit Switching, Packet Switching, Frame Relay, Asynchronous Transmission Mode (ATM).

Local Area Network : LAN Technology, LAN Systems, Bridges.

Communication Architecture and Protocols : Protocol and Architecture, Internetworking, Transport Protocols, Network Security, Distributed Applications, Glossary.

Bibliography and References:

1. William Stalling, *Data and Computer Communications*, Fifth Edition, Pearson Education.

BCA – 602 : Cryptography and network Security

Classical Encryption Technique, Cipher Model, Substitution Technique, Transposition & Rotol Technique, Steganography, Simplified DES, Differential & Linear Cryptanalysis, Cipher Design Principle and Modes of Operation.

Finite Fields : Group, Ring, Field, Modular Arithmetic, Euclid's Algorithm, GF(p) Form, Polynomial Arithmetic, AES, Triple DES, RC5 & RC4, Encryption Function, Traffic Confidentially, Key Distribution & Random Number Generation.

Number Theory : Fermat's & Euler's Theorems, Testing of Primality, Chinese Remainder Theorem, Discrete Logarithms, Public Key Cryptography, RSA, Diffic-Hellman Key Exchange, Elliptic Curve Algorithm & Cryptography, Authentication Requirement & Function.

Message Authentication Code, Hash Function & their Security & MACs, MD5 Digest Algorithm, RIPEMD-160, HMAC-390.

Digital Signature & their Standard, Authentication Protocol, Authentication Application, Electronic Mail Security, IP Security, IP Security Architecture, Encapsulation Security Payload, Web Security & Secure Socket & Transport Layer Security, Intruders, Malicious Software, Firewalls.

Bibliography and References:

1. William Stalling, *Cryptography & Network Security Principles & Practices*, Pearson Education.

BCA – 603 : Artificial Intelligence

AI and Foundation of AI, Intelligent Agents Environments, Structure of Agents, Problem Solving Agents, Toy Problems, Uniform Search Strategy, Avoided Repeated States, Security Partial Information, Informed Search Strategy, Heuristic Function, Search Algorithm and Optimization Problem, Constraint Satisfaction Problems, Games & Optimal Decision in Games, Alpha-Beta Pruning.

Knowledge Based Agent, Propositional Logic, Reasoning Patterns, First Order Logic Model, Interface in First-Order Logic, Forwarded Chaining, Backward Chaining, Ontological Engineering, Action, Situation & Events, Mental Event & Mental Object, Internet Shopping World, Semantic Network and Description Logic, Planning Problem, Planning with State Search, Partial Order Planning, Planning Graph, Planning & Activity in Real World, Uncertain Knowledge Reasoning, Probabilistic Language Processing, Machine Translation, Perception, Image Processing & Object Recognition.

Bibliography and References:

1. Stuart Russell & Peter Norvig, *Artificial Intelligence*, Pearson Education.

BCA – 604 : Oracle & Developer

Introduction to Oracle and their different version: Different Oracle Tools, Database and RDBMS, OORDBMS, Oracle Database Administration, SQL * Plus, PL/SQL, SQL, Database Component, Table Spaces, Stored procedure, Trigger, Cursor, Procedure and Function, Oracle Data Type, Operation, Creation of Database Component, Modifying Component, Data Constraints, Column Level Constraints and Table Level, Operator and Expression List, Range Searching and grouping Data, Joining, Subquery Indexes, Views, Sequences, Granting Permission, Revoke Operation, PL/SQL Block Structure with Iterative Control, Transaction Control and Concurrency Control, Locks, Cursors, Cursors for Loops, Error handling in PL/SQL, Stored Procedure and Function, Types of trigger and their Use, Raise_Application_Error Procedure, Oracle Form, Development with Developer 2000, Form Components, Form Module, Item, Canvas, Window Part of Form Designer, Tools for Form Designer, Running Form, Layout Editor, Data Navigation with Oracle Form, Property Class with Visual Attributes, Library and Alerts, Displaying Context Sensitive Help, Working with LOV Objects Using Radio-Buttons, Cross Table Updation, Parameter Passing in Forms, Multiple Canvas on Form menus, Assigning Command to a Menu, Opening Form Through the Menu Toolbar Basic, Report, Layout of Reports, Boilerplate, Oracle Report Interface, Assigning the Layout, Creating a Break Report, Creating a Matrix Report.

Bibliography and References:

1. Ivan Bayross, *Oracle & Developer,* BPB.

BCA – 605 : Projects

Two Projects based on Theory Paper BCA – 603.

BCA – 606 : Projects

Two Projects based on Theory Paper BCA – 604.

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