

BCA Part - III

BCA301 : Data Structure (Using CICH)

Question Paper pattern for Main University Examination

Mar Marks: 100

Part-I (very short answer) consists 10 questions of two marks each with two questions from each unit. Maximum limit for each question is up to 40 words.

Part-II (short answer) consists 5 questions of four marks each with one question from each unit. Maximum limit for each question is up to 80 words.

Part-III (Long answer) consists 5 questions of twelve marks each with one question from each unit with internal choice.

UNIT-I

Introduction to Design: Algorithm, analyzing Algorithms and problems.

Linear Structure: Arrays, records, stack, operation on stack, implementation of stack as an array, queue, types of queues, operations on queue, implementation of queue.

UNIT-II

Linked Structure : List representation, Polish notations, operations on linked list - get node and free node operation, implementing the list operation, inserting into an ordered linked list, deleting, circular linked list, doubly linked list.

UNIT-III

Tree Structure : Concept and terminology, Types of trees, Binary search tree, inserting, deleting and searching into binary search tree, implementing the insert, search and delete algorithms, tree traversals , Huffman's algorithm.

UNIT - IV

Graph Structure : Adjacency list, Warshall's algorithm , adjacency multilist representation. Orthogonal representation of graph. Graph traversals - bfs and dfs. Shortest path, all pairs of shortest paths.

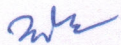
UNIT-V

Searching and sorting : Searching - Sequential searching, binary searching, hashing. Sorting - selection sort, bubble sort, quick sort, heap sort, merge sort, and insertion sort, efficiency considerations.

Recommended reference books :

1. S. Lipschutz: Data Structures; Mc Graw Hill International Edition 2008.
2. A.V. Aho, J.E. Hopcroft, and J.D. Ullman, Data Structures and Algorithms, 314 Edition; Pearson Education Asia, 2008
3. Salaria R.S.: Data Structure and Algorithms Using C/C++; 4th Edition; Khanna.
4. Jean-Paul Tremblay and Paul G. Sorenson, An Introduction to Data structures with applications TMH Publishing Co.Ltd.
5. A. Michael Berman: Data Structures via C++ Oxford University Press.
6. Jean-Paul Tremblay and Paul G. Sorenson, An Introduction to Data Structures with application, TMH Publishing Co. Ltd.

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BCA302 : System Design Concepts

Question Paper pattern for Main University Examination

Mar Marks: 100

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UNIT -I

Introduction to Systems Design Environment: Systems Development Approaches-Function Oriented, Data Oriented, Object Oriented, Development Process, Methodologies, Tools, Modeling Methods, Processing Types and Systems, Batch Processing, Realtime Processing.

System Development Life Cycle, Linear or Waterfall Cycle, Linear cycle phase problem definition, system specification, system design, system development, testing, maintenance Problems with Linear Life Cycle, Iterative Cycles, Spiral model Requirements analysis, Importance of Communication, Identifying Requirements, Data and Fact Gathering Techniques, Feasibility Studies, Introduction to Prototyping, Rapid Prototyping Tools, Benefits of prototyping.

UNIT -II

System Design: Interface design tools, user interface evaluations, Introduction to Process Modeling, Introduction to Data Modeling.

System Design Techniques, Document Flow Diagrams, Documents, Physical Movement of documents, Usefulness of Document Flow diagram, Data Flow Diagrams, DFD notation, Context diagram DFD leveling, Process descriptions structured English, Decision Trees and Decision Tables, Entity Relationship Diagrams, Entities, Attributes, Relationship, Degree, Optionality, Resolving many to many relationship, Exclusive relationship, Structure Charts, Modules, Parameter passing. Execution sequence, Structured Design, Conversion from Data Flow Diagrams to Structure Charts.

UNIT - III

Testing fundamentals: Objectives, principles, testability, Test cases: White box & Black box testing strategies: verification & validation, UNIT test, integration testing, validation, testing, system testing, System Implementation, Maintenance and documentation.

UNIT -IV

S/W Project planning Objectives, Decomposition techniques : S/W Sizing, Problem-based estimation Process based estimation, Cost Estimation Models : COCOMO Model, S/W Design.

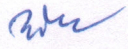
UNIT - V

An overview of Management Information System: Definition & Characteristics, Components of MIS, Frame Work for Understanding MIS : Information requirements & Levels of Management, Simon's Model of decision-Making, Structured Vs Un-structured decisions, Formal Vs. Informal systems. Developing Information Systems.

References:

1. Igor Hawryszkiewycz, Introduction to System Analysis and Design, 4th edition, Prentice-Hall.
2. Jeffrey L. Whitten, and Lonnie D. Bentley, Systems analysis and Design Methods 4th edition, Tata McGraw-Hill.
3. Roger, S. Pressman, "Software Engineering-A Practitioner's Approach", Third Edition, McGraw Hill
4. R.E. Fairley, 'Software Engineering Concepts', McGraw Hill
5. J. Kanter, "Management/Information Systems". PHI.
6. Jalota "An Integrated Approach to Software Engineering", Narosa Publishing House.
7. Gordon B. Davis & M.H. Olson." Management Information Systems : Conceptual Foundation, structure & Development."

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BCA303 : Networking Technologies

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UNIT-I

Network architecture, configuring network, network strategies, networks types, LAN, MAN and WAN [Basic concepts, Line configurations topology, transmission mode, identify key components of network, categories of network, differentiating between LAN, MAN, WANS and Internet).

UNIT - II

The OSI model. The physical layer (bandwidth limited signals, transmission media, wireless transmission), the data link layer, error detection and correction, data link protocols, Bridges, the network layer routing algorithm, congestion control algorithm, internet working, the transport layer, the application layer, MAC protocols for high speeds LANS.

UNIT-III

Introduction to TCP/IP (Understand the TCP/IP Protocol Suite, its history and modification processes compare TCP/IP to the Open Systems Interconnection (OSI) reference model. Examine a number of TCP/IP applications such as FTP, Telnet, DNS, DHCP, Boot. etc. connection less Internetworking, IP, IPv6, IP multicasting. Routing protocols, TCP, UDP. SNMP, SMTP and MIME, HTTP.

UNIT-IV

Circuit Switching: Simple switching Network, Circuit Switching Networks, Brief idea of following (detail working) not required.

Circuit Switching Concepts: Space Division switching, Time Division Multiplexing, Routing in circuit switching Networks, Control Signalling, Inchannel & common channel signaling.

UNIT-V

Data Communication Systems, Serial Data formats. encoded data formats, error detection and correction) Information about microwave.

Recommended Books :

1. William Stallings: Data & Communications, Sixth Edition
2. A. S. Tanenbaum : Computer Networks
3. Behrouz A Foruzan, Data Communication and Networking; 3 Edition; Tata McGraw Hill. 2004

BCA304 : Core Java Programming

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UNIT-I

Overview of Object Oriented Concepts in Java.

Introduction: getting and installing the Java Development Kit, Java features like security, portability, byte code, java virtual machine, object oriented, robust, multithreading, architectural neutral, distributed and dynamic, Java programming language structure and syntax, control statements (The If statement, Logical Operators, The Conditional Operator, the Switch Statement, Variable Scop, Loops).

UNIT - II

Java arrays, Java Strings, Operations on Strings and String Buffer Objects, Class, Objects, Methods and Problem solving using classes, objects and relationships. Inheritance, types of Inheritance.

UNIT -III

Java utilities like java.lang, java.util, java.io, GUI in Java using AWT and Swing, Event Handling Mechanisms, AWT based effective GUI in Java : Detailed overview of AWT classes, Graphics primitives and UI Components, Layout features, Standalone GUL applications. Layout Managers.

UNIT - IV

Applets : Introduction to Applet coding, Applet life cycle, Graphis facility, Coler and Font, Passing parameters to applets, Apletcontext, Inter Applet Communication. Threading in Java : Fundamentals of Multi-threading Java coding with Thread classes, thread Management in Java, Implicit wait, Using Runnable interface, Thread Management in fava. Implicit wait, Using Runnable interface.

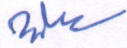
UNIT-V

Overview of Networking in Java : URL class and its usage through connection, Sockets based connectivity, TCP/IP Sockets and server sockets.

References :

1. Patrick Naughton, Herbert Schildt :, Java, The Complete Reference : 7th Edition.
2. E. Balagurusamy: Programming with Java- Tata McGrawHill Publishers. II Edition
3. Khalid A. Mughal, Rolf W. Rasmussen; A Programmer's Guide to Java Certification (2nd Edn.).
4. Cay. S Horstmann, Gary Cornell; Core Java Vol I & II; The Sun Micro Systems Press.
5. Ken Arnold, James Gosling: Core Java Fundamentals(Volume I and Volume 2). 2nd Edition-, Addison Wesley.
6. Kathy Sierra, Head first Java, 2nd Edition, Orielly.
7. Bruce Eckel: Thinking in Java, 4th Edition.

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BCA305: E-Commerce

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UNIT-I

Introduction to Electronic Commerce : Definition of Electronic Commerce, The scope of Electronic Commerce.

Business Strategy in an Electronic Commerce : The value chain, Competitive advantage, Business Strategy. Business to Business Electronic Commerce : Inter-organizational transactions, Electronic markets, Electronic data interchange (EDI), EDI: the nuts and bolts, EDI and Business Inter organizational E-Commerce.

UNIT- II

Designing (Technical, Detailed, High Level): Introduction to Technical Design and Construction. A Client Server Model of E-Commerce, Understanding Technical Design, Construction. Introduction to Detail Design, High-Level Design, Performing High-Level Design, High Level design of Business transactions. Applying High-Level design with example.

UNIT - III

Testing & Implementation: Introduction to Testing, Understanding Testing, Applying Testing. Challenges and Opportunities in Applying Verification and Validation.

UNIT - IV

Electronic Payment Systems: Special features required in payment systems, Types of E-payment systems E-Cash E-cheque. credit card, Smart Card, Electronic Purses, E-Marketing, E-Customer Relationship Management, E Supply Chain Management. Security Issues in E-Commerce: Security risk of E-Commerce, Types of threats, Security tools and risk management approach. Business Ethical.

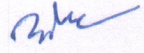
UNIT-V

Introduction to M-Commerce: Business using smart devices (Mobile, e-wallet, online shopping and payment system via mobile, security and privacy features), Mobile delivery technology, applications of M Commerce. M Wallet, Mobile Shopping,

References :

1. P.T. Joseph, E-Commerce: A Managerial Perspective, PHI, 2002.
2. Ravi Kalakota & A.B. Whinston, Frontiers of electronic Commerce Pearson Education.
3. Ravi Kalakota & A.B. Whinston, electronic Commerce-A Manager's Guide, Pearson Education
4. Agarwala Kamlesh, N and Agarwala Deeksha, Business on the Net Introduction to the Ecom., Macmillan India.
5. Bharat Bhaskar , Electronic Commerce - Framework Technologies and Application Tata McGraw Hill.

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BCA306 (B): Advance Technologies of Programming through PHP

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UNIT-III

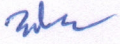
Strings: Creating and accessing String, Searching & Replacing String, Formatting String, String Related Library function.

Functions : Defining a Function, Calling a Function Parameter Passes Returning Value from Function.

References

1. PHP, The Complete Reference, Steven Holzner, TMH
2. Beginning PHP 5.3, Matt Doyle, John Wiley & Sons

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