TEST NAME: 314 – COMPUTER SCIENCE

PC Software and Programming in 'C'

Development of computers and types - Logical organization of Digital Computers - Memory - Main Memory - RAM and Cache - I/O Units - Secondary Memory - Operating Systems - DOS Commands - Windows 98and Windows 2000 concepts - Windows Explorer - Working with files and folders - Running Programs - Using Recycle Bin.

Microsoft Office - MS Word Basics - Headers, Footers, Tables - Graphics - Templates - Macros - Mail Merge. Power Point Basics - Creating presentations - Menus - Tool Bar - Opening a presentation - Creating New Slide -Deleting a Slide - Copying a Slide - Slide Numbering - Saving - Closing - Printing.

MS Excel - Work Sheets - Formatting - Functions - Charts - Graphical - Worksheets as Databases - Linking.

Introduction to C - Data Types - Flow of Control - Functions - Storage Classes - Arrays, Pointers and Strings.

Bitwise Operators and Enumeration types - Preprocessor - Structures and unions - Structures and list processing - Input/output and Operating Systems.

OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES

Fundamentals of Object Oriented Programming – History and Evolution of object oriented programming Constants, Variables and Data Types - Comparing Java with C++

Operators and expressions – Decision making using branching and looping – Functions and Procedures.

Java evolution – Java Programming – Constants, Variables and data types- class, objects and methods-Pointers and Arrays - Binding Data and Functions - Functions and Operator Overloading.

Reusing Classes-Managing errors and Exceptions – Virtual Functions and Polymorphism. Data Structures: Stacks- Queues-Binary trees - Graphs.

Modern DBMS

Database Management: Basic concepts and definitions-file processing systems-the Range of Database applications - Advantage of the Database approach - Costs and Risk of the Database approach - Components of the Database Environment.

Data development Process: Database development within information system development - Database development process - Three Scheme Architecture for database development - Three Tiered Database Location Architecture.

Modeling Data in the Organization: Modeling the rules of the organization -The ER model Entity -Relationship Model Constructs, Relationships. Enhanced E.R. Model and Business Rules: Representing super types and subtypes- Specifying Constraints in super type/subtype relations.

Logical Database design and the relational Model: The Relational data model-Integrity constraints - Transforming EEK diagrams into relations - Introduction to normalization. The basic normal forms - Merging relations.

Advanced Normal forms: Boyce - Codd normal form - Fourth normal form - Higher normal forms - Physical Database design and performance: Physical Database design process - Designing folds - Designing Physical records and denormalization - Designing Physical files - Using and selecting indexes - Designing Databases - optimizing for query performance The SQL Environment defining a database in SQL - Inserting, updating and deleting data internal scheme definitions in RDBMS - Processing single Tables.

Advanced SQL: Processing Multiple tables - Ensuring transaction integrity - Data dictionary facilities - SQL 99enhancements and Extension to SQL - Triggers and Routines - Embedded SQL and Dynamic SQL.

The Client/Server Database Environment - Client/server Architecture - three tier architecture - Partitioning - Application - Role of the mainframe using parallel computer architecture - using Middle wave establishing client/server security - Client/server issues Data and database administration: The roles of data and database administration, Modeling Enterprise data - planning for databases - Managing data security - Backing of databases - Controlling concurrent access - Managing data quality - Data dictionaries and repositories - Overview of turning the database for performance.

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