Syllabus of Entrance Test for Post of Programmer

Programming Concepts Using C / C++/Java/Dot Net

(50 Marks)

Arrays: Declaration; initialization; 2-dimensional and 3-dimensional array, passing array to function, strings and string functions, and character arrays.

Pointers: variables, swapping data, swapping address v/s data, misuse of address operators, pointers and arrays, pointers to pointers, strings, pointer arithmetic, additional operators, portability, pointers to functions, using pointers with arrays, void pointers.

Structures and unions: syntax and use, members, structures as function arguments, structure pointers, array of structures as arguments, passing array of structure members, call by reference.


Introduction to graphics, graphic initialization, graphic modes, drivers, basic drawing functions, Animations- concept and implementation, Building graphical user interface.

Introduction to classes and objects; Constructor; destructor; Operator overloading; Function overloading; function overriding; friend function; copy constructor; Inheritance.; Single, Multiple, and Multilevel Inheritance; Virtual function and Polymorphism: Dynamic binding, Static binding; Virtual functions; Pure virtual function; concrete implementation of virtual functions; Dynamic binding call mechanism; Implementation of polymorphism; virtual destructors.

Templates: Function Templates, Class Templates, Member Function Template and Template Arguments, Exception Handling, Standard Template Library

Java Program Development, Java Source File Structure, Comparison with other languages (C & C++), Java and Internet, Features of Java, Java Virtual machine, ByteCode, Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Datatypes, Variables: Assignment, Initialization and Conversions, Operators: Arithmetic, Assignment, Modulus, Relational, Boolean, Bitwise., Precedence Summary, Unicode Character Set, Arrays: Single and Multidimensional. Control Statements and Looping Structures

Class Fundamentals, Object reference, Garbage Collection, Constructors, Access Control, Modifiers, methods, Nested, Inner Class & Anonymous Classes, Abstract Class, Argument Passing Mechanism, Method Overloading, Recursion, Dealing with Static Members. Finalize() Method, Native Method. Use of “this” reference, Cloning Objects, Generic Class Types, Inheritance in Java, Overriding Super Class Methods, Use of “super”, Polymorphism in inheritance, Type Compatibility and Conversion, Packages & Interfaces: Defining and importing packages, Understanding Class path, Implementing interfaces.

Exceptions & Errors, Types of Exception, Control Flow in Exceptions, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and UnChecked Exceptions, Operation on String, Mutable & Immutable String, Using Collection Bases Loop for String, Tokenizing a String, Creating Strings using StringBuffer, Multi-Threaded Programming, Thread Life-Cycle, Thread Priorities, Synchronizing Threads, Inter -
communication of Threads, DeadLock. Applet & Application, Applet Architecture, Parameters to Applet, Embedding Applets in Web page. Utility Methods for Arrays, Observable and Observer Objects, Date & Times, Using Scanner.


C# Basics, variables, predefined data types: Value types and reference types, CTS types, Conditional statements, loops, jump statements, Enumerations, Arrays, Using statement, Namespace, Aliases, The Main() Method, Multiple Main Methods, Passing Arguments to main(). More on compiling C# files, console I/O, Using Comments, the C# preprocessor directives. C# Programming Guidelines. Objects and Type: Classes and Structs, Partial classes, static classes, The object class Inheritance: Types of inheritance, virtual methods, hiding methods, calling base versions of functions, sealed classes and methods, constructors of derived classes, modifiers, interfaces, derived interfaces.

Operators and Casts: Operator shortcuts, The ternary operator, The checked and unchecked operators, The is operator, The as operator, The sizeof operator, The typeof operator, Nullable types and operators, The Null coalescing operator, operator precedence, Type safety, Type conversions, Boxing and unboxing, comparing objects for equality, Operator overloading, User defined casts. Delegates and Events, Memory management and Pointers, Strings and regular expressions, Collections, Array Lists, The Stack, Queue, and Sorted List class, Hash Tables and Dictionaries, Generics, Generic collection classes, Error and Exception Handling, Threading, Applications with multiple threads, Manipulating Threads, Creating Threads with Thread pool. Data Access with .net: ADO.net overview, Using Database Connections, Executing commands, Fast Access, The Data Reader, Managing data and relationship: The Dataset Class, XML schemas, Populating a Dataset, Persisting Dataset Changes, Working with ADO.net, windows forms, viewing .net data.
Software Engineering  (15 Marks)


Software Process and Project Metrics: Measures, Metrics and Indicators, Software measurement: Size-Oriented Metrics, Function-Oriented Metrics, Extended Function point metrics. Capability Maturity Model Integration (CMMI), Process Planning, Estimation, COCOMO Model, Risk Analysis & Management: Software risks, Risk identification, Risk monitoring and management. Software requirements: need for SRS, requirement process; Requirement specification (characteristics, components), Concept of Use Cases, Concept of validation


Introduction to Software Reliability: Basic Concepts, Software Reliability, Hardware Reliability, System Reliability, Software Reliability metrics, Operational Profile, Reliability Modeling, General Model Characteristics, Execution Time Component, Calendar Time Component, Calendar Time to Execution Time Relationship, Markovian Models: Poisson Type Models, Binomial Type Models, Poisson Type Models versus Binomial Type Models, Numerical examples.

Operating Systems  (15 Marks)


Computer Networks  (20 Marks)


