<div align="center">लिखित परीक्षा का पाठ्यकम</div>

1- मानसिक सामर्थ्य (**Mental ability)**

Logical Diagrams-तार्किक आरेख, Symbol-Relationship Interpretation संकेत-सम्बन्ध विश्लेषण, Codification- संकेतीकरण, Perception Test प्रत्यक्ष ज्ञान बोध, Word formation Test- शब्द रचना परीक्षण Letter and number series-अक्षर और संख्या श्रृंखला Word and alphabet Analogy [शब्द और वर्णमाला में आंशिक समरूपता, Common Sense Test - व्यावहारिक ज्ञान परीक्षण, Letter and number coding अक्षर और संख्या संकेत Direction sense Test दिशा ज्ञान परीक्षण, Logical interpretation of data-आकड़ों का तार्किक विश्लेषण, Forcefulness of argument प्रभावी तर्क, Determining implied meanings अतर्निहित भावों का विनिश्चय करना

2- तर्कशक्ति (**Reasoning)**

Analogies-समरूपता, Similarities समानता, Differences, भिन्नता, Space visualization खाली स्थान भरना, Problem solving-समस्या को सुलझाना, Analysis and Judgement-विश्लेषण और निर्णय Decision-making-निर्णायक क्षमता, Visual memory- स्मृति, Discrimination-विनंदन क्षमता, Observation- प्रेक्षण, Relationship सम्बन्ध Concepts अवधारणा, Arithmetical reasoning-अंकगणितीय तर्क, Verbal and figure classification शब्द और आकृति वर्गीकरण, Arithmetical number series- अकगणितीय संख्या श्रृंखला Abilities to deal with abstract ideas and symbols and their relationships-अमूर्त विचारों व प्रतीको तथा उनके सम्बन्धों से सामंजस्य की क्षमता

3- सूचना प्रौद्योगिकी (**Information Technology)**

भिन्नता, Space खाली स्थान भरना, Problem solving-समस्या को सुलझाना, Analysis and Judgement-विश्लेषण और निर्णय Decision-making-निर्णायक क्षमता, Visual memory- स्मृति, Discrimination-विनंदन क्षमता, Observation- प्रेक्षण, Relationship सम्बन्ध Concepts अवधारणा, Arithmetical reasoning अकगणितीय तर्क, Verbal and figure classification शब्द और आकृति वर्गीकरण, Arithmetical number series- अंकगणितीय संख्या श्रृंखला Abilities to deal with abstract ideas and symbols and their relationships-अमूर्त विचारो व प्रतीकों तथा उनके सम्बन्धों से सामंजस्य की क्षमता।

Digital Logic

Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point)

Computer Organization and Architecture

Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface, I/O interface (Interrupt

and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.

Programming and Data Structures

Programming in C: Functions, Recursion, Parameter passing, Scope, Binding

Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary

search trees, Binary heaps.

Algorithms

Analysis, Asymptotic notation, Notions of space and time complexity, Worst

and average case analysis; Design: Greedy approach, Dynamic programming.

Divide-and-conquer: Tree and graph traversals, Connected components,

Spanning trees, Shortest paths, Hashing, Sorting. Searching asymptotic

analysis (best, worst, average cases) of time and space, upper and lower

bounds, Basic concepts of complexity classes P. NP, NP-hard. NP-complete.

Compiler Design

Lexical analysis, parsing. Syntax directed translation, Runtime environments,

Intermediate and target code generation. Basics of code optimization.

Operating System

OS: Windows Server, UBUNTU, UNIX Commands & Tools Processes.

Threads, Inter-process communication, Concurrency, Synchronization,

Deadlock CPU scheduling. Memory management and virtual memory, File

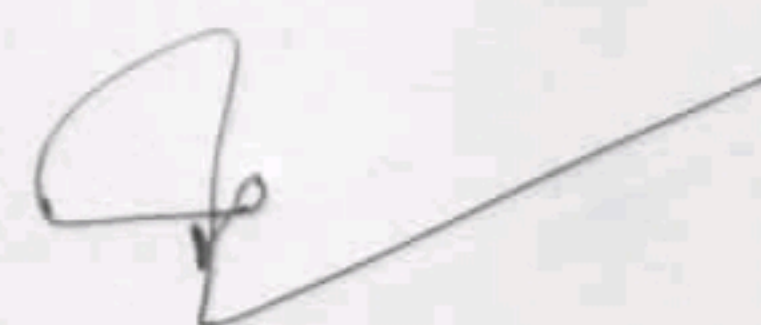systems, I/O systems, Protection and security.

Workplace productivity Tools:

Word Processing Tools, Electronic spreadsheets, Electronic presentation tools,

Microsoft Office (Word, Excel, Power Point, Access), Open Office. Using these

tools in English and official Indian languages (Windows, UNIX and Unicode

Fonts), Exchange of Files across these platforms, GUI Development Tools

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Databases

ER-model, Relational model (relational algebra, tuple calculus), Database
design (integrity constraints, normal forms). Query languages (SQL), File
structures (sequential files, indexing, B and B+ trees). Transactions and
concurrency control, MySQL, MS SqlServer with Advance Technique,Mirroring.

Information Systems and Software Engineering

Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

Computer Networks

ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control TCP/UDP and sockets IP (v4), Application layer protocols (ICMP, DNS, SMTP, POP, FTP, and HTTP). Basic concepts of Hubs, Switches, gateways and routers, Network security basic concepts of public key and private key cryptography, digital signature, firewalls, IPv4, IPv6, Subneting, SAN(Storage Area Network), Data centre and its architecture, Cloud Network and its securities

Web technologies

HTML, CSS, XML, basic concepts of client-server computing, ASP.Net

4- कम्प्यूटर प्रोग्रामिंग Computer Programming

Introduction:

History of Computing, Future of Computing, Trends in Programming Language.

Programming Language:

C Language: Introduction to 'C Language, Conditional Statements and Loops, Arrays, Functions, Storage Classes, Structures and Unions, Pointers, Self- Referential Structures and Linked Lists, Recursion, Parameter Passing, Scope. Binding. Abstract Data Types, Stacks, Queues, Trees, Binary Search Trees, Binary Heaps, Programming & Problem Solving Through 'C' Language

C++ with Object Oriented Programming: Overview of Object Modelling, Object and Dynamic Modelling, Functional Modelling. System and Object Design, Comparison of Existing Methodology, Programming Style in object Oriented Oriented, Relational Data

Base Object, Object Diagram Compiler, and distributed Design System.

An overview of C, Origin of C++, Classes and Objects, arrays, Pointers and references, Functions and Operator Overloading. Inheritance, Virtual Function and Polymorphism, C++ I/O, System Basics, C++ files I/O, Array based VO. Templates and Generic Programming, Exception Handling, Templates.

Java:

Java Applets, Graphics, Graphical User Interfaces, Exception Handling. Threads: Java basics, Java coding conventions, Java API, Garbage collection. I/O Streams, Java database connectivity, AWT, Swing, Advance Server techniques like Servlet, JSP.

Parallel Computing:

MPI, Open MP. Threads

Java Script:

If, if else switch statements, Loop statements (for/while/do-while), Objects (Date and Months). Using Buttons, Object Handling Statements (for-in/with). JavaScript functions.

Internet and web programming:

Foundations for Internet programming- An overview of Internet Programming-TCP/IP Protocol Model, LAN Topologies, Internetworking IP Address & Domain Names, Client Server Model, WWW Design Issue. Security and Encryption, Developing Internet Application. Java and Internet. Java Development Environments.

Introduction to Java Programming, Visual C++, Tools for Internet and Desktop, Extending Java using Active X. CGI & Internet Application, Perl and Internet, Perl in Internet Application. Microsoft Implementation using win 32 Internet (Winl.net), Java script. VB Script, Python Language.

Internet Mark-up Language (HTML5, SGML) Netscape Extension, Microsoft Internet only HTML, Text Shockwave and Lingo, creating an active X control to Active Web Page, Creating Netscape Navigator, Pulling Web Information, Creating a custom Integrated Application and Real Audio.