Scientist-C (Computer Science)

(Indicative Syllabus and Weightage of Marks in Screening Test)

Sl. No.	Topic	(Weightage %)
1.	**Operating System:** Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.	10
2.	**Databases:** ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures), Transactions and concurrency control.	20
3.	**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	20
4.	**Networks and Security:** ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP(v4),OSI Model, Application layer protocols (ICMP, DNS, SMTP, POP, FTP, HTTP); Basic concepts of hubs, switches, gateways, and routers. Basic concepts of public key and private key cryptography, digital signature, firewalls	15
5.	**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. Programming Languages such as C/C++/PHP/ Java/.NET	15
6.	**Web technologies**: HTML, XML, JSON basic concepts of client-server computing, Scripting, AJAX,	10
7.	General Aptitude / Awareness/ INFLIBNET Awareness	10

Pallab Pradhan.

Scientist In-charge (P&A)
INFLIBNET CENTRE