CPC '26 Portions

	Core	Analytics		Management	
		Data Analytics	Additional Common Syllabus		
CPC-1	Applied Mechanics, Strength of Materials, Metallurgy and Materials Engineering., Machining, Forming, Joining, Welding, Casting, Tooling, Metrology, Processing of Powders, Polymers, Composites.	**Probability:** Basic definitions, Discrete and Continuous Distributions (Uniform, Normal, Poisson etc), Bayes Theorem, Probability Density and Distribution Function, Cumulative Distribution Function, Moment Generating Function. **Statistics:** Estimators, CLT, Confidence Intervals, Measures of Central Tendency, Normal Distribution, Hypothesis Testing, p-value, over and under sampling, Maximum Likelihood Estimation (MLE). **Python:** Basics of Python (Array, String, etc.).	Data Interpretation: Table Chart, Graphs, Pie Charts, Bar Graphs, Line Graphs, Caselets, Combined Data Sets, etc. Logical Puzzles.	**SQL:** SQL Theory, Basic Database Terminology, Creating Databases, SQL Operators, SQL Clauses, Grouping Data, Joins, Subqueries, Aggregate Functions	OTs **Critical Reasoning:** Inductive & Deductive Reasoning, Passage Analysis, Argument Construction, Critique, Planning & Strategy **Data Insights:** Multi-Source Reasoning, Tables & Graphs, Two-Part Analysis, Data Sufficiency **Case Studies:** Caselets, Mixed Data Sets **Interviews (won't be asked in OTs)** Guesstimates, Case Studies (Profitability, Market Entry, Growth, Unconventional), Behavioural Questions, Situational Questions, Business Sense, Resume Validation, Puzzles
CPC -2	Thermal and Powerplant Engineering., Design of Machine Elements, IC Engines, Automobile Engineering., Kinematics and Dynamics of Machines, Fluid Mechanics and Fluid Machinery, Energy Conversion Systems, Computer Integrated Manufacturing, CNC, Automation, Mechatronics, Robotics, CAD, Rapid Prototyping	**Python:** Intermediate and Advanced Python for Data Science (including Python oops). Data pre-processing, Data Visualization: Data pre-processing Libraries, Different types of plots and their use cases. Excel, Power BI. **SQL:** Basics of SQL for data science. **ML:** Basics of Machine Learning (Theory) and Linear Regression.		**Power BI:** Slicers, Tables, Adding Columns, Transforming & Cleaning Data, Visualisation, Sorting, Filtering, Hierarchies, Power Query	
CPC-3 (along with syllabus of CPC 1 and 2)	Lean Manufacturing, Supply Chain Management, Operations Management, Analysis of Production Systems, Operations Research, Quality, Reliability, Safety, Product Design and Development, Work System Design and Facilities Planning, Material Handling, Flexible Manufacturing Systems, Industry 4.0, System simulation.	**SQL: Advanced SQL for Data Science.** **ML:** Complete ML Theory, Regression v/s Classification. Dimensionality reduction and its importance, Principal Component Analysis (PCA). Machine Learning Algorithms: Linear Regression, Polynomial Regression, Logistic Regression, Decision Trees, Random Forest, XGBoost (Both Regressors and Classifiers), KNN, Naive Bayes, K-Means Clustering, Hierarchical Clustering, Support Vector Machines (SVM). **DL**: Basics of Deep Learning (Theory). **GenAI** : Basics of LLMs, Chunking, RAG etc		**MS Excel:** Basic functions and formulas, Formatting, Filtering, Sorting, Cell Referencing, Pivot Tables & Charts, Data Validation, Data Cleaning, Conditional Formatting, Dynamic Arrays	

	Aptitude			Software						
	Quant	LR	Verbal	DS	Algos | Coding questions based on	OS	Database	C, C++ | Output question based on	Network	Web
CPC -1	Number System, Percentages, Logarithms, Ratios & Proportions, Interest, Averages, Geometry, Mensuration.	Analogy, Series, Logical Deductions, Sets and Venn Diagram.	Reading Comprehension, Para Jumble, Para Summary, Odd one out, Grammar corrections, Synonyms, Antonyms, etc.	Arrays, Strings, Matrix	Searching Algorithms, Sorting Algorithm	Basic OS concepts, Processes vs Threads, Heap vs Stack	SQL, ACID and BASE Properties, Relational Model, Document Model	Variable Declaration, Definition and Scope, Data Types, Storage Classes, Type Qualifiers, Access Modifiers, Operators, Control Statements, Preprocessor	Types, Topologies, OSI/ISO Model, TCP/IP Model	Frontend and Backend, APIs, REST, SOAP
CPC -2	Number Series, Mixtures, Profit and Loss, Time and work, Distance and Speed problems.	Coding/ Decoding, Direction and Distance, Blood Relations.		Stacks, Queues, Linked List	Greedy Algorithms, Bit Manipulation Algorithms, Divide and Conquer	Multitasking, Multiprocessing, Parallel Processing, Concurrent Programming, Priority Inversion, Process	Keys, Relational Algebra, Joins, Database connection	Macros, Functions, References, Pointers, Structures and Unions, Memory Management	Packet Switching and Circuit Switching	Cloud Computing - Hypervisor and types of virtualizations, Virtual machines, SSH, Serverless Computing concepts
CPC-3 (along with syllabus of CPC 1 and 2)	Permutation and Combinations, Probability, Data Sufficiency, Functions and inequalities, Quadratic equations, Number Series.	Syllogism, Double Lineup, Grouping and Selections, Puzzles, Clock and Calendar.		Binary, Binary Search & AVL Tree, Graphs, Heaps	Dynamic Programming, Backtracking	Critical Section, Mutex Locks, Semaphores, Deadlock, Resource Allocation Graph, Virtual Memory, Segmentation, Cache (L1, L2, L3)	SQL Queries, NoSQL Databases, Types of NoSQL databases.	Classes and Objects, Constructors, Destructors, Function Overloading and Overriding, Operator Overloading, Inheritance, Virtual Functions and Polymorphism, Friend Functions, STL Function	TCP, and UDP, TCP 3- way Handshake Process, Domain Name Server, HTTP and WWW, Ports, URL and URI	GraphQL, LAMP stack, MERN Stack, General Sysad concept, System Architecture Design