FUTURE TOPPER

Empowering CUET Aspirants

CUET 2027

Syllabus

Computer Science / Informatics Practices

Subject Code: 308

Based on the Latest Official CUET (UG) 2026 Syllabus released by NTA

Section A – Common to Computer Science and Informatics Practices

1. Database Concepts

• Introduction to database concepts; difference between database and file system.
• Relational data model: concept of domain, tuple, relation, keys – candidate key, primary key, alternate key, foreign key.
• Relational algebra: selection, projection, union, set difference and cartesian product.

2. Structured Query Language – I

• Advantages of SQL; Data Definition Language (DDL), Data Query Language (DQL), Data Manipulation Language (DML); Introduction to MySQL; DataTypes.
• DDL: CREATE TABLE, DROP TABLE, ALTER TABLE.
• DQL: SELECT, FROM, WHERE.
• DML: INSERT, UPDATE, DELETE.
• Math functions: POWER(), ROUND(), MOD().
• Text functions: UCASE()/UPPER(), LCASE()/LOWER(), MID()/SUBSTRING()/SUBSTR(), LENGTH(), LEFT(), RIGHT(), INSTR(), LTRIM(), RTRIM(), TRIM().

3. Structured Query Language – II

• Date Functions: NOW(), DATE(), MONTH(), MONTHNAME(), YEAR(), DAY(), DAYNAME().
• Aggregate Functions: MAX(), MIN(), AVG(), SUM(), COUNT(), COUNT(*).
• Querying and manipulating data using Group by, Having, Order by.
• Operations on Relations: Union, Intersection, Minus, Cartesian Product, JOIN.

4. Computer Networks

• Introduction to computer networks; evolution of networking.
• Network types: LAN, WAN, MAN.
• Network devices: Modem, Ethernet Card, Repeater, Hub, Switch, Router, Gateway.
• Network Topologies: Mesh, Ring, Bus, Star, and Tree topologies.
• Basic concepts of MAC and IP Address; difference between Internet and Web.

Section B1 – Computer Science

1. Exception and File Handling in Python

• Exception Handling: Syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, Try-except-else, Try-finally, built-in exception classes.
• File Handling: Text file and binary file; file types; open and close files; reading and writing text files; binary files using pickle module; file access modes; setting offsets in a file.

2. Stack

• Stack (List Implementation): Introduction to stack (LIFO operations); PUSH and POP operations and implementation in Python.
• Expressions in Prefix, Infix and Postfix notations; evaluating arithmetic (Postfix) expressions using stack; conversion of Infix expression to Postfix.

3. Queue

• Queue (List Implementation): Introduction to Queue (FIFO); INSERT and DELETE operations and implementation in Python.
• Introduction to Deque and its implementation in Python.

4. Searching
• Sequential search, Binary search; Analysis of Sequential and Binary Search (best, worst and average cases).
• Hashing: Hash Functions, Collision Resolution.

5. Sorting
• Overview of sorting techniques; Bubble Sort, Selection Sort and Insertion Sort (dry run to identify best, worst and average cases); implementation in Python.

6. Understanding Data
• Data and its purpose; collection and organisation.
• Statistical methods: mean, median, mode (measures of central tendency); range, standard deviation, variance (measures of variability); data interpretation.

7. Database Concepts
• (Same as Section A – Topic 1)

8. Structured Query Language
• (Same as Section A – Topics 2 & 3; also includes Data Types and constraints in MySQL)

9. Computer Networks
• (Same as Section A – Topic 4; also includes Domain Name System)

10. Data Communication
• Concept of communication; types of data communication; switching techniques.
• Communication Media – Wired: Twisted pair cable, Co-axial cable, Ethernet Cable, Optical Fibre.
• Mobile telecommunication technologies.
• Wireless Technologies: Bluetooth, WLAN, Infrared, Microwave.
• Network Protocol: HTTP, FTP, IP, PPP; electronic mail protocol.
• Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data Transfer Rate (bps, Kbps, Mbps, Gbps, Tbps).

11. Security Aspects
• Threats and prevention: Viruses, Worms, Trojan horse, Spam, Cookies, Adware, Firewall, HTTP vs HTTPS.
• Network Security: Firewall, Cookies, Hackers and Crackers; Antivirus and their workings.
• Network security threats: Denial of Service, Intrusion problems, Snooping, Eavesdropping.

Section B2 – Informatics Practices

1. Database Query Using SQL
• Math, Text and Date functions (same as Section A).
• Aggregate functions; Group by, Having, Order by.
• Operations on Relations: Union, Intersection, Minus, Cartesian Product, JOIN.

2. Data Handling Using Pandas – I
• Introduction to Python libraries: Pandas, NumPy, Matplotlib.

- Data structures in Pandas: Series and DataFrames.
- Series: Creation from array, dictionary, scalar; mathematical operations; Head and Tail; Selection, Indexing and Slicing.
- DataFrames: Creation from dictionary of Series, list of dictionaries, CSV files; iteration; operations on Rows and Columns; Boolean Indexing; Styling & Formatting; Joining, Merging and Concatenation.
- Importing/Exporting data between CSV files and DataFrames.

3. Data Handling Using Pandas – II

- Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, standard deviation, variance.
- DataFrame operations: Aggregation, Group by, Sorting, Deleting and Renaming Index, Pivoting.
- Handling missing values – dropping and filling.
- Importing/Exporting data between MySQL database and Pandas.

4. Plotting Data Using Matplotlib

- Purpose of plotting; drawing and saving: line plot, bar graph, histogram, pie chart, frequency polygon, box plot, and scatter plot.
- Customising plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.

5. Introduction to Computer Networks

- Introduction to Networks; types: LAN, MAN, WAN.
- Network Devices: modem, hub, switch, repeater, router, gateway.
- Network Topologies: Star, Bus, Tree, Mesh.
- Introduction to Internet, URL, WWW and applications: Web, email, Chat, VoIP.
- Website: introduction; difference between website and webpage; static vs dynamic webpage; webserver and hosting.
- Web Browsers: introduction; commonly used browsers; browser settings; add-ons and plug-ins; cookies.

6. Societal Impacts

- Digital footprint; etiquettes for net surfing and communicating through social media; data protection.
- Intellectual Property Rights (IPR) and their violation; plagiarism; licensing and copyrights; Free and Open-Source Software (FOSS); creative commons.
- Cybercrime and cyber laws; hacking; phishing; cyberbullying; Overview of Indian IT Act; preventing cybercrime.
- E-waste: Hazards and management.
- Awareness about health concerns related to the usage of technology: effect on eyesight, physiological issues, and ergonomic aspects.

7. Project Based Learning

- Approaches for Solving Projects; Steps in project-based learning; Teamwork; Components of Teamwork.

Important Notes

- This syllabus is based on the official CUET (UG) 2026 syllabus released by NTA.
- No official CUET 2027 syllabus has been released at the time of this publication.
- Students are advised to regularly check the NTA official website (nta.ac.in) for updates.
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