INFORMATION PRACTICES (IP)

Session: 2024-2025

Maximum Marks: 100   **Time: 3Hrs**

Theory: Marks 70.

Practicals: Marks 30. External: 20 marks, Internal: 10 marks

TOPIC	Marks	Theory Lectures	Practical
Computer Networking	20	40	05
Internet & Cyber Security	15	25	-
Fundamentals of DBMS	20	40	20
Python Programming	15	30	20

Unit-I: Computer Networking

Introduction to Data Communication, Components of Data Communication, Data Flow (Simplex, Half Duplex and Full Duplex), A brief overview of networking, Identifying Computer over a Network (MAC, IP, DNS); IP Addressing: Types and Classes. Types of networking (PAN, LAN, MAN, WAN); Network Topologies (BUS, RING, STAR, TREE); Network Media- Guided (Twisted pair, Co-axial, Fiber Optics), Un-Guided Media, (Infrared, Radio, Microwave).

Network Device: Hub, Modem, Repeater, Gateway, Router, Switch, and their Functions. Network Technologies –Ethernet, Bluetooth, Wi-Fi.

Unit-II: internet and Cyber Security

Internet and World Wide Web, Internet Concepts: Web page and types, Web Browsers, URL, Web Address and Web application, ISP, Web Server and hosting of a website.

Cybercrime: Brief overview, Types of Cyber Crimes. Network threats (Virus, Trojan Horse, Worm, Denial of Services, Snooping), Social Networking Risks and Challenges- (Illegal content, Spam, Fake friends, Malicious Links, Phishing).

Cyber Security – Firewall and Anti-Virus.

Unit-III: Fundamentals of RDBMS

Introduction to Database, Definition of Database, DBMS, RDBMS Concepts, Table, Attribute, Tuple, Field; Data Definition, Data Types Key Concept, Types of Keys, Candidate Key, Alternate Key, Primary Key, Foreign Key; Database basic Constraints, Unique, Null, Not Null;

Structured Query Language (SQL) Concept, Types of SQL Commands; Basic SQL Data Types – Char, Varchar2, Number, Long, Date; SQL Operators – Arithmetic, Relational, Logical; Types of SQL Commands – DDL (Create, Alter, Drop, Truncate, Rename), DML (Insert, Select, Update, Delete), DCL (Grant, Revoke), TCL (Commit, Rollback, Save Point);

SQL Functions – Brief Overview, String Functions (LOWER, UPPER, INITCAP, CONCAT, SUBSTR, INSTR, TRIM), Number Functions (ABS, CEIL, FLOOR, LEN, MOD, SQRT); Group Functions (SUM, AVG, MAX, MIN, COUNT)

Unit-IV: Python Programming

Revision of Decision Structures, LOOPING Structures, Lists: List Operations - Creating, Initializing, Traversing, and Manipulating Lists, List Methods, and Built-In Functions viz len(list), Max(list), Min(list), cmp(list1,list2), list.append(obj), list.count(obj), list.index(obj), list.insert(obj), list.remove(obj), list.reverse(obj) and list.sort(obj).

Dictionary: Concept of Key-Value Pair, Creating, Initializing, Traversing, Updating, And Deleting Elements, Dictionary Methods, and Built-In Functions viz len(), pop(), popitem(), del keyword, clear. Basic introduction to Pandas.

Programs of Python

1. To print the multiplication table of a given number.
2. To find the sum of 'n' natural numbers.
3. To find the factorial of a natural number.
4. To count the number of vowels in user entered string.
5. To find minimum of three numbers
6. To generate Fibonacci series.
7. To append elements in a List
8. To remove elements in a List
9. To find the largest and smallest numbers in a List.
10. Create a dictionary to store names of states and their capitals.

Write the 20 SQL Query's