



माध्यमिक शिक्षा बोर्ड राजस्थान, अजमेर

पाठ्यक्रम सत्र 2026-27

Computer Science

CLASS-12 Sub Code -03

परीक्षा योजना निम्नानुसार हैं -

प्रश्नपत्र	समय(घंटे)	प्रश्नपत्र के लिए अंक	सत्रांक	पूर्णांक
सैद्धान्तिक	3:15	56	14	70
प्रायोगिक	4.00	30	0	30

इकाई संख्या व नाम	अध्याय संख्या व नाम	शीर्षक एवं विषय वस्तु	अंक भार
Unit I: Computational Thinking and Programming -	Chapter 1 : Exception handling in Python Chapter 2 : File Handling in Python Chapter 3 : Stack Chapter 4 : Queue Chapter 5 : Sorting Chapter 6 : Searching	- Introduction to Exception, Syntax Error, Built-In-Exceptions (SyntaxError, ValueError, IOError, KeyboardInterrupt, ImportError, EOF Error, ZeroDivisionError, IndexError, NameError, IndentationError, TypeError, OverflowError), raising exception, the raise statement, the assert statement - Handling Of Exceptions: Need, Steps Of Handling Exception, Catching Exceptions, try...except block, try...except...else clause, finally clause, Recovering through finally clause Introduction To Files, Types Of Files(Text File, Binary File), Relative And Absolute Paths - Text File: Opening A Text File, Text File Open Modes(r, r+, +r, w, a, a+, +a), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(),reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file, offset in file(tell(), seek()), creating and traversing a text file - Binary File: Basic operations on a binary file: open using file open modes(rb, rb+, wb, wb+, ab, ab+), closing a binary file, import pickle module, dump() and load() method, write/create , search, appendand update operations in binary file - Introduction, Applications Of Stack, Operations OnStack(PUSHAnd POP), Implementation Of Stack Using List, Notations For Arithmetic Expression, Infix, Prefix And Postfix Notation - Introduction, Applications Of Queue, Operations On Queue(enqueue, dequeue, is empty, peek ,is full), Implementation Of Queue Using List - Introduction To Deque, Application OfDeque, Operations OnDeque(INSERTFRONT, INSERTREAR, DELETIONFRONT, DELETIONREAR) - Introduction, Sorting Techniques: Bubble Sort, Selection Sort, Insertion Sort, Time Complexity Of Algorithm	32

		• Introduction, Types Of Searching Techniques: Linear Search, Binary Search, Algorithm And Implementation Of Linear And Binary Search, Applications of binary search, Search by Hashing ,implementation of Hashing, Collision	
Unit II: Computer Networks	Chapter 10 : Computer Networks Chapter 11: Data Communication Chapter 12 : Security Aspects	• Introduction, Evolution Of Networking (ARPANET, NSFNET, INTERNET) • Network Topologies And Network Types: Types Of Network (PAN, LAN, MAN, WAN), Network Topologies (Bus, Star, Ring, Tree, Mesh), Network Devices (Modem, Ethernet Card, RJ45, Repeater, Hub, Switch, Router, Gateway), MAC Address And IP Address • Internet, Web And Internet Of Things, WWW, Domain Name System • Concept Of Communication, Components Of Data Communication (Sender, Receiver, Message, Medium, Protocols), Bandwidth, Data Transfer Rate • Types Of Data Communication (Simplex, Half-Duplex, Full-Duplex Communication), Switching Techniques (Circuit Switching, Packet Switching) • Transmission Media: Wired Transmission Media (Twisted Pair Cable, Co-Axial Cable, Fibre Optic Cable), Wireless Transmission Media (Radio Waves, Microwave, Infrared Waves), Wireless Technologies: Bluetooth, Wireless LAN • Mobile Telecommunication Technologies: 1G, 2G, 3G, 4G and 5G • Protocols: need for Protocols, HTTP, FTP, PPP, SMTP, TCP/IP • Threats And Prevention, Malware: Virus, Worms, Ransomware, Trojan, Spyware, Adware, Keyloggers (Online Virtual Keyboard Vs On-Screen Keyboard), Modes Of Malware Distribution, Combating Malware • Antivirus: Methods Used By Antivirus To Detect Malware (Signature-Based Detection, Sandbox detection, Data Mining Technique, Heuristics, Real-Time Protection), Spam, HTTP Vs HTTPS • Firewall: Introduction, Types Of Firewall (Network Firewall, Host -Based Firewall), Cookies, Use Of Cookies, Types Of Cookies • Hackers And Crackers: Introduction, Types Of Hackers, Network Security Threats, DoS, Network Intrusion, Asymmetric Routing, Buffer Overflow Attacks, Traffic Flooding, Snooping ,Eavesdropping	08

Unit Database Management	III: Chapter 7 : Understanding Data Chapter 8 : Database Concepts Chapter 9 : Structured Query Language (SQL)	• Introduction To Data, Types Of Data (Structured And Unstructured Data), Data Collection, Data Storage, Data Processing, Statistical Technique for Data Processing-Measures Of Central Tendency (Mean, Median, Mode), Measures Of Variability (Range, Standard Deviation) • Database Concepts: Introduction, File System, Limitations Of a File System, Database Management System, File System Vs DBMS, Key Concepts Of Dbms: Database Schema, Data Constraint, Meta-Data Or Data Dictionary, Database Instance, Query, Data Manipulation, Database Engine • Relational Data Model: Relation, Attribute, Tuple, Domain, Degree, Cardinality, Important Properties of a Relation, Keys In a Relational Database (Candidate Key, Primary Key, Composite Key, Foreign Key) • Structured Query Language: Introduction, Data Manipulation Language, Data Type (char(n), varchar(n), int, float, date), Constraints (NOT NULL, UNIQUE, DEFAULT, PRIMARY KEY, FOREIGN KEY), SQL for Data Definition: CREATE database, USE database, SHOW databases, DROP database, SHOW tables, CREATE table, DESCRIBE table, ALTER table (add and remove an attribute, add and remove primary key), DROP table, INSERT, DELETE, SELECT, OPERATORS (mathematical, relational and logical), ALIASING, DISTINCT CLAUSE, WHERE CLAUSE, IN , BETWEEN, ORDER BY, meaning of NULL, IS NULL, IS NOT NULL, LIKE, UPDATE COMMAND, DELETE command, , Functions in SQL, aggregate functions (MAX, MIN, AVG, SUM, COUNT), GROUP BY, HAVING clause, Operations on Relations, cartesian product on two tables, JOINS: equi-join and natural join • Interface Of Python With An SQL Database: connecting SQL with python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications	16
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Practical

S.No.	Unit Name	Marks
1	Lab Test : Python Program (60% logic + 20% documentation + 20% code quality)	7
2	Lab Test : 5 SQL Queries based on one/two table(s)	5
3	Report file : Minimum 20 Python Programs. Out of this at least 5 programs should be based on SQL Queries and 2 programs based on Python database connectivity.	7
4	Project (using concepts learnt in classes 11 and 12)	8
5	Viva Voce	3
	Total	30

Prescribed Book :

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