

QUESTION PATTERN

No of Questions: 150

Sl.NO	SUBJECT	MARKS
1.	Computer Science	130
2.	General Knowledge	10
3.	Education Psychology	10
Total		150

III. SYLLABUS

COMPUTER SYSTEMS ARCHITECTURE

THE COMPUTER SYSTEM

Marks: 10

System buses: Computer Components, Computer function, Interconnection Structures.

Internal Memory: Computer Memory System Overview, Cache Memory.

Input/ Output: External Devices, Direct Memory Access, The External Interface.

Operating System Overview.

1. THE CENTRAL PROCESSING UNIT

Computer Arithmetic: The Arithmetic and Logic Unit (ALU), Floating-Point Arithmetic.

Instruction Sets: Types of Operands, Types of Operation, Register Organization, The Instruction Cycle.

OPERATING SYSTEMS Marks: 10 Introduction: System software, OS strategies; multiprogramming, batch.

Operating System Organization: basic OS function, kernels, device drivers.

Device Management: buffering.

Process Management: resource abstraction, process hierarchy.

Scheduling: Strategy Scheduling: Strategy selection.

Synchronization Principles: deadlock, selection. semaphores, multiprocessors.

Deadlocks: hold and wait, Banker's Algorithm, consumable resources.

Memory Management: memory allocation strategies, variable partition.

Protection and Security: internal access authorization.

DIGITAL ELECTRONICS

Marks: 10

Fundamental Concepts: NAND, NOR and Exclusive-OR operation, Boolean Algebra.

Number system and Codes: Primary, Octal, Hexadecimal, Signed Numbers Codes.

Combinational Logic Design: K-map representation of logical functions and simplification using K-map of 4 and 5 variables.

Multiplexers, Decoders.

Flip-Flops: Edge triggered flip flop.

DATA STRUCTURES

Marks: 15

Abstract data types and objects, graphical user interfaces; language support and OOP: Inheritance, classes and subclasses, header files, overloading.

Programming with Data structures: Stacks, queues, lists, trees and balanced binary trees, algorithms for searching and sorting and open office.

PROGRAMMING IN C++

Marks: 20

1. Object Oriented Programming: Data hiding, Data encapsulation, Class and Object, class and Concrete class, Polymorphism (Implementation of polymorphism using Function overloading as an example in C++); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies.
2. Implementation of Object Oriented Programming concepts in C++: Members of a class-Data Members AND Member Functions (methods), inside class definition and outside class definition using scope resolution operator (::) Objects as function arguments-pass by value and pass by reference; Constructor and Destructor:

Constructor: Declaration and Definition of a constructor, Default Constructor, Overloaded Constructors

Destructor. Declaration and definition of destructor;

Inheritance (Extending Class): Concept of Inheritance, Base Class, Derived Class, Defining derived classes, Multilevel inheritance and Multiple inheritance,

Data File Handling:

Reading and Manipulation of text from an already existing text File (accessing sequentially);

3. Pointers:

Declaration and Initialization of Pointers: Dynamic memory allocation/ deallocation operators: new, delete;
Pointers and Arrays: Array of Pointers, Function returning a pointer. Deference operator. self referential **structure**
Python, PHP;

RELATIONAL DATABASE MANAGEMENT SYSTEM

Marks: 10

1. Database Management System

Introduction to database concepts: Relation/ Table, Data, Concept of String Candidate key, Attenuate key, Primary

Key, Foreign Keys; Data Normalization-first, second, third, BCNF normal form;

Examples of Commercially available Database Management System's (Back-End) — MySQL,

Examples of Front End Software's Visual C++

2. RDBMS Tools: Oracle

Classification of SQL Statements: DML (SELECT, INSERT, UPDATE, DELETE),

SQL SELECT Statement: SQL SELECT statement, Selecting All the Columns, Selecting Specific Column, Column Heading Default,

SELECT Statement Continued: Limiting Rows during selection (using nn-LERE clause), Logical Operators, Use of Logical

Operators (AND/OR/NOT Operators), Logical Operator Precedence, ORDER BY Clause, Sorting in Ascending/ Descending Order,

Functions: SQL Functions, Types of SQL Function (Single Row/ Multiple Row), Character Functions UPPER
01 TRIM O, SUBSTR O, (ROUND O, TRUNC O, MOD O), Working with Dates (LAST_DAYO,
MONTHS_BETWEENO,

ROUND O, Implicit and Explicit Conversion,

Grouping Records: Types of group functions (MAX, MIN, AVG, SUM, COUNT, INT O), using AVG and SUM

Functions, Group By Clause, Grouping By More than One Column, Having Clause.

Sub Queries: Guidelines for using Sub Queries, Types of Sub-Queries (Single Row and Multiple Row)

Database Objects: DDL (Data Definition Language), , Creating Synonyms, Querying a View, Modifying a view.

Including Constraints: UNIQUE KEY, PRIMARY KEY, FOREIGN KEY, FOREIGN KEY

Creation of a Table/ Relation: CREATE TABLE Statement, Creating a Table by Using a Sub-Query;

Managing Existing Tables and other Database Objects: The ALTER TABLE Statement, Adding a New Column in a Table, Dropping Tables;

BUSINESS COMPUTING Marks: 15 integration of user Interface and Database;

More application areas of Databases:

Inventory control, financial Accounting, Fees Management System, Result Analysis System, Admission Management System, Income Tax Management System;

Advance Program Development Methodology: System Development

Life Cycle, Data Models (Entity Relationship Model), Attributes (Single, Composite and Multi - Valued), Relationship (One-to-One, One-to-Many and Many-to-Many SQL Statements,

Data Dictionary, Data Warehousing, Data Mining,

WEB DEVELOPMENT Marks: 10

HTML] DHTML

Introduction, Objectives, Introduction to Universal Resource Identifier (URI)

Basic Tags of HTML: HTML, HEAD, TITLE, BODY, Ordered List-OL (LI, Type-I, I, A, a; START, VALUE),

Unordered List-UL (Bullet Type- Disc, Circle, Square, -DL, DT, DD), Web Page Authoring Using HTML

Tables: Creating Tables, Border, WIDTH, CAPTION, ALIGN,

Frames: Frameborder, height and width,

Forms: Definition, MS-Access or Oracle,

Form Tags: FORM, METHOD, Document Object Model

1. Active Server Pages (ASP)

Active Server Pages (ASP): Concept of ASP, features of ASP,

Variables: Explicit and Implicit Declaration;

Functions:

String Manipulation Functions: Ucase O, Lcase O, Len O, Right O, Mid O, Left O, InStr O

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Time & Date Functions: Date 0, Day0, Hour 0, Left 0, Len 0, Minute 0, Month 0, Monthname 0, Now 0;

Arrays: Declaration and use of 1 dimensional and 2 dimensional arrays;

Procedures and Functions, Passing parameters/ arguments;

Connecting with Databases: Creation of DSN, using

OLEDBWEB SCRIPTING

Marks: 10

1. Java Script

Event handling, Adding Java Script in an HTML Page

MULTIMEDIA AND AUTHORING TOOLS

Image Formats

TIFF, BMP, JPG/ JPEG, GIF, IC, PDF, PSD:

Image Scanning with the help of scanner: Setting up Resolution, Size, File formats of images; image preview

Significance of PDF-creation, modification; Animation, Morphing and Applications

Graphic Tools: Image Editing Software (Photoshop/ CorelDraw)

Layers: Adding layers, dragging and pasting selections on to layers, moving and copying layers, duplicating layers, deleting layers, merging layers. Opacity.

Concept of Multimedia: Picture! Graphics, Audio, Video;

Sound: Recording Sound using Sound Recorder (Capture), Sound editing, Effect enhancement;

Voice Recognition Software Philips/ Dragon, MiDi Player, Sound Recorder.

Sound Quality: Radio Quality,

1. Movie File Formats: AVI, MPEG.

Movie Frames: Concept of Frame, Frame Buffer,;

2. Multimedia Authoring Using Macromedia Flash

Making of Simple Flash Movie,

COMMUNICATION AND NETWORK CONCEPTS

Marks: 20

Evolution of Networking: Internet;

Data Communication terminologies: Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, kbps, Mbps, Gbps, Tbps);

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Network devices: Modem, Ethernet Card, Hub, Switch, Router,

Different Topologies- Bus, Tree; Concepts of LAN, WAN, MAN;

Protocol: TCP/IP, Internet, Wireless/ Mobile Communication, GSM, Electronic Mail, Chat, Video Conferencing;

Network Security Concepts: Cyber Law, Hackers and Crackers;

WebPages; Hyper TEXT markup Language (HTML), Hyper Text Transfer Protocol (HTTP); Website, Web*rowser, Web Servers.

Subject: Education Psychology

Unit- 1

Pre-primary Education — Programme of Pre-primary Education — universalization of Primary Education — Equality of opportunity — Secondary and Higher Secondary Education — Need for uniform pattern — Non-formal and Adult Education — Functional Literacy Programme — Programmes for workers in industry — programme for dropouts — Role of Educational institutions in Non-formal Education — Open School / Open University, Quantity and Quality of Education — State and National leave — Unemployment and underemployment — Delinking employment from degrees — Skill development — Vocation Skill oriented education — Man power planning and education — Brain drain — Special problems of rural and tribal people — illiteracy and poverty — Eradication of poverty through Education.

Unit -2

National integration — International understanding — Value Education in action- Nation and health — sanitation — Safety and first aid — Women's education — Education for handicapped — Education for gifted — Population Education — Need for protecting the environment — Environmental Education — Language policy — Medium of education — channel of international communication — Management of Schools, private, aided, Government, Local authorities — Government Department of education, administration and academic supervision — Headmaster / Headmistress as an administrator and academic supervisor

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GOVERNMENT GAZETTE EXTRAORDINARY

History and Culture of Tamil Nadu:

Unit - 3

Political — Spiritual — Religion — Literature — Language — Education — Natural Resources — Trade — Occupations — Historical places — Tourist centres — Arts — Games — Society.

Unit - 4

The Learner, Learning process — Learning situation — Significance of Education Psychology to the teacher concept of growth and maturity — development characteristics and trends — Development tasks and education — Development of mental abilities — Attention, inattention and distraction — span of attention, sensation and perception — factors in perception — Errors — concept formation — piglets states of cognitive development concept maps language. Imagination, thinking and reasoning — Psycholinguistics - Implications for the teacher.

Unit - 5

Special characteristics of adolescents and their problems, attitudes, interest, group behaviour, Discipline — Leadership — Nature and importance of learning — individual differences in learning — Learning curves — Transfer of learning — Learning styles - Factors in learning — Types of learning — Trial and error — Conditioning — Classical and operant Learning by insight — Imitation — Levels of learning Remembering and forgetting — Learning Disabilities.

Unit - 6

Motivation — Maslow's hierarchy of needs — roles of rewards and punishments — Levels of aspiration — Achievement motivation Goal as a motivational factor — Nature of intelligence — Theories of intelligence — Assessment of intelligence — IQ constancy — Distribution — uses of intelligence test — Creativity — Creativity and intelligence — Identification and promotion of creativity — Meaning of personality — Factors influencing personality

— Assessment of personality — integrated personality — concept of mental health hygiene — conflict and frustration
— Unrest — Adjustment — Defence mechanisms — Mental illness — Guidance and counselling.

Unit -7

Meaning of educational innovation — principles involved in innovation — Emergence of school — In cultural, social and religious setting — Innovations that emerged from educational experiments-Tagore:- Santiniketan- Gandhiji:- Basic Education — A.S.Neill:- Progressive School — Sri Aurobindo :- Ashram Schools. Rousseau: Children's Education — Montessori — Sense Experience — Bertrand Russel-Education for Social Order — Froebel-Kindergarten- Dewey- Pragmatic life — J. Krishnamoorthy-Freedom in learning situation. Influence of Psychological factors on innovation - principles underlying self-learning devices. Piaget-Experiment's and discovery learning — Child- centred learning. Effects of cultural, religious and social factors on innovation -Principles of equality — conformity to common educational goals.

Unit —8

Modernization of education — National Educational Policy (1986) — DPEP Special focus on Teacher Education (DTERT, DIETs, BRCs, CRCs) MLL based curriculum and syllabus — Joyful learning — Autonomy in institutional structures — Individual freedom- Library based learning: Self paced instruction — pace setting schools — Mobile schools- De- Schooling and non-classroom learning — community schools — school complex Distance education and open learning- Education through mass communication — special education — Sainik school — Defence academy — Educational Technology — need for and use of Instructional technology — mass media for instructional purposes — Review of radio and TV educational programmes — educational computing.

Subject: General Knowledge

Marks - 10

Unit-I

Indian History

History of India • - Vedic period 1526 AD to 1947 — Free India — Modern India

Unit– II

Indian Constitution

Origin of Indian Constitution — Salient and special features — Fundamental rights Legislature — Judiciary — Executive — Audit franchise — Human rights

GOVERNMENT GAZETTE EXTRAORDINARY

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Unit —III

History of Tamil Nadu

Ancient period — Sangam age — Chera, Chola, Pandias — Economical, political, Social Conditions — Literature — Architecture — Fine arts — Geography of Tamil Nadu — Natural boundaries — Resources — Rivers and places.

Unit-IV

Personalities

Books and authors — Discoveries

Unit-V

Sports & Games

Confined to India

Unit- VI

Abbreviations

Unit - Vil

Every Day Science

Unit-Vill

Current

Affairs