

# **Information Technology and Programming–I**

**Class –XI**

**BOARD OF SECONDARY EDUCATION  
RAJASTHAN, AJMER**

# **Information Technology and Programming–I**

## **Class –XI**

### **Translators**

**Dr. Vishnu Goyal (Convenor)**

Govt. R.C. Khaitan Polytechnic College, Jaipur

**Dr. Anil Gupta**

HOD Computer Science & Engg.

MBM Engineering College

Jai Narain Vyas University, Jodhpur

**Dr. Priyadarshi Patni**

Director

Lachoo Memorial College, Jodhpur

**Maninder Singh Bhui**

Assistant Professor

Centre for E-Governance, Jaipur

**Yogesh Sharma**

Assistant Professor

Centre for E-Governance, Jaipur

**Arvind Sharma**

HOD Computer Engg.

Sine International College of Engg., Jaipur

**2018**

# **SYLLABUS COMMITTEE**

## **Information Technology and Programming–I**

### **Class –XI**

**Dr. Vishnu Goyal** (Convenor)

Govt. R.C. Khaitan Polytechnic College, Jaipur

**Dr. Anil Gupta**

HOD Computer Science & Engg.

MBM Engineering College

Jai Narain Vyas University, Jodhpur

**Harjee Ram Choudhary**

Asstt. Professor

Govt. Engg. College, Ajmer

**Dalpat Singh Songara**

Asstt. Professor

Govt. Women Engg. College, Ajmer

**Amarjeet Poonia**

Asstt. Professor

Govt. Women Engg. College, Ajmer

**Vishnu Prakash Sharma**

Asstt. Professor

Govt. Engg. College, Ajmer

**Rajesh Kumar Tiwari**

Principal

Govt. Sr. Sec. School, Bajunda, (Bhilwara)

## **ACKNOWLEDGEMENT**

As per the directive of State Government, new syllabus has been prepared by Board of Secondary Education, Rajasthan on the basis of major social, historical and cultural events at National and State Level, for the students with a view to provide them a platform for an overall personality development and establishing a meaningful relationship between their roots and academics.

Under the programme, in the first phase, text books have been prepared for the session 2016-17 for the students of IX and XI, session 2017-18 for the students of X and XII standard, who are pursuing education in the schools affiliated to the Board of Secondary Education, Rajasthan

Along with an insight into the social, cultural and historical benchmarks, factual information, project-based task and activity-based exercises have also been effectively dealt with in the prescribed books. The books will promote creativity, original thinking, contemplation and expression among the students. The modern techniques and teaching aids will make the learning more effective, interesting and result oriented.

I, therefore, on my behalf and on behalf of the Board of Secondary Education, Rajasthan extend my deep gratitude to the writers and Rajasthan State Text book Board for their kind co-operation in our endeavour to undertake the important work of text book writing and hope to get the same co-operation in future also.

**Prof. B.L. Choudhary**

Chairman

Board of Secondary Education, Rajasthan, Ajmer

## **PREFACE**

Information and communication techniques have come with great revolution in our life. We are continuously pursuing economic prosperity with the help of information technology. E-commerce as an electronic consortium, email for sending mail through internet, online governmental E-governance, E-banking by bank behavior, E-education for online educational material etc. is a medium of continuously developing information technology. With the multi-dimensional use of information technology new doors of development are opening up.

Today the information and communication technology is developing its effective utility in research, business, industry, agriculture, medical, education, entertainment, communication, transport, environment, meteorology, space science, etc. so this basic knowledge has become necessary for all of us today.

Keeping in view the inevitability, the Secondary Education Board, Rajasthan has given it a place in its curriculum. The book is written in accordance with the new curriculum of the Board for class 11 students. While keeping the technical terms in English, the effort has been made to make the language simple, clear and intellectualization. The technical terms have been given in accordance with the terminology accepted by the Government of India. The English word is also given in brackets as needed. This book is titled Information Technology and Programming-I.

This book contains complete information about C programming. Object Oriented Programming, Computer Networking, XML database management System (DBMS) and PHP are also included as per the curriculum. This book will provide complete information about programming to students. The authors explain the microcosm of programming in simple language. Programming constructs are explained in details through suitable example. At the end of the chapter, important points are given. Important questions which may be asked in the examinations are also given at the end of the chapter.

Your suggestions are welcome.

Convenor

## **Syllabus**

### **Class – XI**

#### **(Information Technology and Programming–I)**

##### **Unit-1: Introduction to C Language**

Introduction to 'C' Language, history characterisation of C Language, properties of C language, structure of a c program, pre process of directive, character set, constant, variable, identifiers. Data type-declaration, keyword, input-output function, operators, type conversion of expression, precedence of operators, control statements : if statement, if-else statement, nested if-else statement, switch statement, looping : for loop, while loop and do-while loop, nested loop, break statement, continue statement.

##### **Unit 2: Programming in 'C' Language**

Array: declaration and initialization, one dimensional array, two dimensional array and multi-dimensional array. Function: pre-defined functions, user defined functions – declaration and definition of a function, String and if functions, global and local variable, storage classes, actual and formal parameters, calling a function, call by reference, call by value, passing array to the function. Recursion, introduction to pointers, structures, array with structure.

##### **Unit 3: Object Oriented Programming**

Concept of object oriented programming, structures programming, procedural programming and object oriented programming: difference, advantages and limitations. Characteristics of OOP: Object and Classes, Data encapsulation, data abstraction, polymorphism and inheritance. Structure of a C++ program – tokens, keywords, constants, basic data types. Output using cout and input with cin directives.

##### **Unit – 4: Computer Networking**

**Introduction to Networking-** Network Characteristics. Components. Network Locations. Data Communication Model. Components of Data Communication system Performance. Consistency. Reliability. Recovery, Security; Network Topologies - Star, Bus, Ring, Mesh, Tree, Hybrid; Standardization & Protocols - Need for Standards, Standardization Committees, Internet standards; Transmission Modes & Data Transmission - Simplex, Half Duplex, Full Duplex, Parallel Transmission, Serial Transmission; Categories of Networks - LAN, MAN, WAN, PAN, Internetworks;

**OSI Model** - Physical, Data Link, Network, Transport, Session, Presentation, Application Layers; TCP/IP Model ; Signals in Networking - Analog, Digital, Periodic, Non Periodic Signals; Introduction of Transmission Media in Networks- Twisted Pair Cable, Coaxial Cable, Optical Fiber Cable, Radio Wave Transmission, Satellite Communication; Introduction about Networking Devices - Bridge, Hub, Switch, Router, Repeater etc ; Introduction of Addresses in Networking(MAC & IP) - Classes, IP Address Components, Subnet Mask, IP Address Planning, Introduction about MAC & IPv6; Introduction about Wireless - Wireless LAN Technologies; WLAN standards & security - RF Bands, 802.11, WLAN clients Access to the Network, Access Modes, Coverage Areas, Data Rates, WLAN Devices; Congestion Control & Quality of Services - Data Traffic, Congestion, Congestion Control, Load shedding, Jitter Control, QoS, Technique to improve QoS, Integrated Services, Differential Services; DNS & E-Mail- DNS, Name Space, DNS in the internet, DNS Message, Resolution Process in DNS, DNS Poisoning, E-Mail, Services of E-Mail, E-Mail Architecture, Mail Server;

## **Unit 5: XML**

**XML Basics:** Introduction and Overview, Introduction of Markup Language, Structuring Data, Creating Well-Formed XML Documents, Creating Valid XML Documents, XML Features.

**Creating XML Documents:** The XML Declaration, Tags and elements, Attributes, References, Text. DTD Basics: The Need for XML Document Schema, Types of XML Document Schema, DTD Schema Definition, Validating the XML Document, Entity Declaration XML Schema Basics: XML Schema: Differences between XML Schema and DTD Definitions, XML Schema Structure. XML Namespaces: Introduction of XML Namespaces, Namespace Declaration, Default Namespace.

## **Unit – 6: Database Management System**

**Database Concepts:** Introduction & definition of Database, usage of Database, Database Management System (DBMS), advantages of DBMS. Concept of domain, tuple, relation, key, primary key, alternate key, candidate key, example of database management system; Introduction to RDBMS

**Structured Query Language:** Introduction, Characteristics of SQL, Advantages of using SQL, data definition language (DDL), data manipulation language (DML).

**MySQL commands:** CREATE TABLE, DROP TABLE, ALTER TABLE,

UPDATE...SET..., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, GROUP BY, HAVING, ORDER BY; SQL functions number, string, date.

## **Unit-7: PHP**

**Introduction to web development using PHP:** Basics of scripting, client side vs server side scripting, need of web-development using php, Script tags, variable declaration & access.

**Data types:** Commenting style in code, Primitive data types, Constant declaration & access, Functions.

**Types of Loop:** for, while, do-while.

**Array:** One-Dimension array, Multi-Dimension array, foreach loop for extracting array, Inbuilt-array: `$_GET[]`, `$_POST[]`, `$_REQUEST[]` etc.

**Conditional Constructs in php:** Different types of conditional construct: if – else, and else-if, switch-case statement. Operators: arithmetic, comparison, assignment, logical, conditional. Precedence of operator.

**Connectivity for Php with MySQL:** Connectivity code in php for MySQL database, different MySQL operations perform using php script like: Data Query Language (DQL), Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL).



# **INDEX**

## **Unit -1**

<b>Chapter - 1</b>	<b>Introduction to C Language</b>	<b>1-51</b>
--------------------	-----------------------------------	-------------

## **Unit-2**

<b>Chapter - 2</b>	<b>Programming in C Language</b>	<b>52-119</b>
--------------------	----------------------------------	---------------

## **Unit-3**

<b>Chapter- 3</b>	<b>Object Oriented Programming</b>	<b>120-134</b>
-------------------	------------------------------------	----------------

## **Unit-4**

<b>Chapter- 4</b>	<b>Computer Networking</b>	<b>135--183</b>
-------------------	----------------------------	-----------------

## **Unit-5**

<b>Chapter - 5</b>	<b>XML</b>	<b>184-199</b>
--------------------	------------	----------------

## **Unit-6**

<b>Chapter- 6</b>	<b>Database Management System (DBMS)</b>	<b>200-236</b>
-------------------	--	----------------

## **Unit-7**

<b>Chapter - 7</b>	<b>PHP</b>	<b>237-274</b>
--------------------	------------	----------------