

## YVUCET – 2109 SYLLABUS

### Test -105: COMPUTER SCIENCE

#### SECTION – A (30 Marks)

#### Computer fundamentals & Office Tools, Programming in C

Types of computers – Block diagram of a computer- Memory - Main Memory - RAM and ROM- I/O Units - Secondary Memory - Operating Systems - DOS Commands - Working with files and folders - Running Programs - Using Recycle Bin.

Microsoft Office - MS Word Basics - Headers, Footers, Tables - Graphics - Templates - Macros - Mail Merge. Power Point Basics - Creating presentations - Menus - Tool Bar - Opening a presentation - Creating New Slide - Deleting a Slide - Copying a Slide - Slide Numbering - Saving - Closing - Printing.

MS Excel - Work Sheets - Formatting - Functions - Charts - Graphical - Worksheets as Databases - Linking.

Algorithm – Key features of Algorithms, Flow Charts.

Introduction to C – Structure of C Program –Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples

**Decision Control and Looping Statements:** Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

**Arrays:** Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array, One dimensional array, Two dimensional Arrays, Multidimensional Arrays.

**Strings:** Introduction, Characters, String handling functions.

**Functions:** Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Storage Classes – Recursive functions.

**Pointers:** Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables.

**Structure, Union, and Enumerated Data Types:** Introduction – Nested Structures – Arrays of Structures – Structures and Functions – Unions – Enumerated Data Types

#### SECTION – B (30 Marks)

#### Programming with Java and Data Structures

**FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING:** Object Oriented paradigm –Basic concepts of Object Oriented Programming – Benefits of OOP –Applications of OOP.

**Overview of Java Language:** Simple Java Program – Java Program Structure – Java Tokens- Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments.

**Constants, Variables and Data types:** Constants – Variables – Data types – Declaration of Variables-Giving Values to variables- Scope of Variables-Symbolic Constants-Type Casting.

**Operators and Expressions:** Arithmetic Operators – Relational Operators- Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bitwise

Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Operator Precedence and Associativity.

**Decision Making and Branching:** Decision Making with If statement – Simple If Statement-If else Statement-Nesting If Else Statement- the Else If Ladder-The switch Statement – The ?: operator.

**Decision Making and Looping:** The while statement – The do statement – The for statement – Jumps in Loops, labelled loops.

**Class, Objects and Methods:** Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing class members

**Arrays, Strings and Vectors:** One-dimensional Arrays-creating an Array – Two dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types.

**Interfaces:** Multiple Inheritances - Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.

**Concept of Abstract Data Types (ADTs)-** Data Types, Data Structures, Storage Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Data Structures.

**Stacks:** Definition, ADT, Array and Linked representations, Implementations and Applications

**Queues:** Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications.

**Sorting and Searching:** Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential and Binary Searching.

### **SECTION- C (40 Marks)**

#### **Data Base Management System and Software Engineering**

**Overview of Database Management System:** Introduction, Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, file-based system, Drawbacks of file-Based System, advantages of DBMS, Data models, Database Architecture.

**Relational Model:** Introduction, CODD's Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra.

**Entity-Relationship Model:** Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification.

**Structured Query Language:** Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language. View.

**PL/SQL:** Introduction, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Exceptions Handling.

**INTRODUCTION:** Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis.

**REQUIREMENTS ANALYSIS:** Requirement Engineering Processes – Feasibility Study – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model.

**[Note : This Syllabus only for 2019 YVU CET]**