

**YVUCET - 2020: SYLLABUS**  
**TEST - 121: COMPUTATIONAL DATA SCIENCE**  
**COMMON ENTRANCE EXAMINATION – 2020 FOR ADMISSION INTO**  
**M.Sc. COMPUTATIONAL DATA SCIENCE**

**Section – A (30 Questions/30 Marks)**

**SECTION –A: Fundamentals of Computers**

Computer definition – Types of Computer – Logical Organization of a Digital Computer – Memory: Main Memory : RAM, ROM and Cache – Secondary Memory : Magnetic type, Floppy disk, Hard disk, Compact disk – Input devices – Output devices – Operating system : Definition, functions of an operating system, Types of Operating systems : Brief details of batch processing, Multi Programming, multi tasking, time sharing, real time operating systems - Introduction to DOS, DOS internal commands, DOS External Commands – Introduction to Windows, Desktop, File, Folder, My Computer, My documents, Recycle bin, Internet Explorer, Windows Explorer – Types of Programming Languages.

**Section – B (30 Questions/30 Marks)**

**SECTION – B : MS Office (MS Word, MS Power Point and MS Excel**

**Word Basics :** Starting word, Creating a new document, Opening preexisting document, The parts of a word window, Typing text, Selecting text, Deleting text, Undo, Redo, Repeat, Inserting text, Replacing text, Formatting text, Cut, Copy, Paste – Printing. Formatting Your Text and Documents : Auto format, Line spacing, Margins, Borders and Shading. Working with Headers and Footers: Definition of headers and footers, creating basic headers and footers, creating different headers and footers for odd and even pages. Tables : Creating a simple table, Creating a table using the table menu, Entering and editing text in a table, selecting in table, adding rows, changing row heights, Deleting rows, Inserting columns, Deleting columns, changing column width .Graphics : Importing graphics, Clipart, Insert picture, Clip Art Gallery, using word's drawing features, drawing objects, text in drawing. Templates : Template types, using templates, exploring templates, modifying templates. Macros : Macro, Recording macros, editing macros, running a macro. Mail Merge : Mail Merge concept, Main document, data sources, merging data source and main document. Overview of word menu options word basic tool bar.

**Power Point :** Basics, Terminology, Getting started, Views Creating Presentations : Using auto content wizard, Using blank presentation option, Using design template option, Adding slides, Deleting a slide, Importing Images from the outside world, Drawing in power point, Transition and build effects, Deleting a slide, Numbering a slide, Saving presentation, Closing presentation, Printing presentation elements.

**Excel Basics:** Overview of Excel features, Getting started, Creating a new worksheet, Selecting cells, Entering and editing text, Entering and editing Numbers, entering and editing Formulas, Referencing cells, moving cells, copying cells, sorting cell data, inserting rows, inserting columns, Inserting cells, Deleting parts of a worksheet, clearing parts of a worksheet. Formatting : Page setup, changing column widths and Row heights, auto format, changing font sizes and Attributes, centering text across columns, using border buttons and Commands, changing colors and shading, hiding rows and columns. Introduction to functions: Parts of a functions, Functions

Requiring Add-ins, The Function Wizard. Examples functions by category: Data and time functions, Engineering functions, Math and Trig functions, Statistical functions, Text functions. Excel Charts: Chart parts and terminology, Instant charts with the chart wizard, creation of different types of charts, printing charts, deleting charts – Linking in Excel Excel Graphics: Creating and placing graphic objects, Resizing Graphics, Drawing Lines and Shapes.

### Section – C (40 Questions/40 Marks)

#### **SECTION-C: C Language fundamentals and Programming**

Introduction – 'C' Fundamentals : Programming – High Level Languages – compiling programs – Integrated Development Environments – Language Interpreters – Compiling your first program – Running your program – understanding your first program – comments – variables, Data types, and Arithmetic Expressions : working with variables – Understanding Data types and constants – working with Arithmetic Expressions – The Assignment operators – The printf function – The scanf function - Decision making : The if statement – the if else construct – Nested if statements – The else if construct – The switch statement – Boolean variables – The conditional operator – program looping : The for statement – Relational operators – Nested for loops – The while statement – The do statement – The break statement – The continue statement – working with Arrays : Defining an array – Initializing Arrays – character Arrays – The const Qualifier – Multidimensional arrays- variable length Arrays. Working with Functions : Defining a Function- Arguments and Local variables – Returning Function Results – Function calling – Declaring Return Types and Argument types – Top Down programming – Functions and Arrays – global variables – Automatic and static variables – Recursive Functions.

Working with structures : Defining structure – Functions and structures – Initializing structures – Array of structures- structures containing structures – structures containing Arrays – Structure variants – Character strings : Array of characters – variable length character strings – Escape characters – character strings, structures and arrays - character operations. Pointers : Defining a pointer variable – using pointers in Expressions – pointers and structures (Exclude Linked List) – Pointers and Functions – pointers and Arrays – operations on pointers – pointers and Memory address. Operations on Bits : Bit operators – Bit fields The preprocessor : The # define statement – The # # operator – The #include statement – conditional compilation. More on Data Types : Enumerated Data Types – The typedef statement – Data Type conversions Input and Output Operations in “C” : Character I/O – formatted I/O – Input and Output Operations with Files – Special functions for working with Files. Miscellaneous and Advanced features: The Goto Statement, the null statement, working with unions- the comma operator-type qualifiers.

#### **Books:**

1. Michael Miller, Absolute Beginners Guide to Computer Basics, Fourth Edition, Pearson Education (2007).
2. Ed Bott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education (2007).
3. Balaguruswamy.E, Fundamentals of Computing, TMH(2008).