**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE -641 020**

**For candidates admitted from academic year 2013-14 onwards Under New CBCS**

Programme : B. Sc Physics Subject Code: **6CT12**

Course Title : **PROGRAMMING IN C AND ITS PHYSICS APPLICATIONS**

Core : 12

Year : III Semester : VI

5 Hours/Week 5 Credits

 **UNIT – I: C LANGUAGE FUNDAMENTALS**

History of C-language – Basic Structure of C Programming - Character set – Constants - Variables - Data Types - Operators and Expression - Escape Sequence Characters – Library Functions - Input and Output statements: scanf - printf - getchar - putchar - gets – puts.

**UNIT – II: CONTROL STRUCTURES AND FUNCTIONS**

Arrays Variables – Assigning Data for Array - One, Two and Multi dimensional Array - Conditional control statement: if, else, nested if, switch case - Looping statement: while, do while, for, nested for- break - continue and Unconditional control statement: goto statement.

Function declaration – argument – Call the function – Return statement - Type of functions - Recursive functions.- Passing Array to functions - Automatic, Static, Register and External storage.

**UNIT – III: STRUCTURE AND UNIONS**

Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Copying and comparing structure variables – Operations on individual members – Array of structures – Structure within structures – Structures and functions – Unions – Size of structures.

**UNIT – IV: POINTERS AND FILES**

Understanding pointers – Accessing the address of a variable – Declaring pointer variables – Initialization of pointer variables – Accessing a variable through its pointer – Pointer expressions

Defining and opening of a file – Closing a file - Input/output operation in files – Error handling during I/O operations – Random access to files – Command line arguments.

**UNIT - V : PHYSICS APPLICATION PROGRAMMS**

Quadratic equations - Matrix multiplication - Conversion of temperature from C to F and F to C - Determination of G by Boy’s Method - Young’s Modulus - Uniform bending - Spectrometer - Refractive index & Dispersive power of prism - Newton’s Rings : Radius of curvature - Determination of Velocity of light: Foucault’s Rotating Mirror Method - Estimation of Average Global Solar Radiation

**BOOK FOR STUDY:**

1. A textbook on C by E. Karthikeyan

 Publication: Prince–Hall of India Pvt

 Ltd, New Delhi

 Year: 2008.1st edition

UNIT – I Book 1 Chapter 1 to 2

UNIT – II Book 1 Chapter 3 to 6

UNIT – III Book 1 Chapter 8

UNIT – IV Book 1 Chapter 7 & 9

**BOOKS FOR REFERENCE:**

1. Programming in ANSI C by E. Balagurusamy

3rd edition Tata Mc Graw Hill

Publishing Company Limited, 2004

1. Let us C by Yeshavant Kanitkar

4th edition, BPB publications, 2002