MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science   Semester: I
Course Title: Problem Solving using C   Course Code: 22CSCCPC13
No. of Hours: 60   LTP: 400   Credits: 3

Objectives
- To develop simple algorithms and flow charts to solve a problem.
- To learn the fundamental programming concepts and methodologies which are essential in building good C programs
- To analyze the importance of procedure and object oriented programming.

Course Outcomes
CO1: Explain the basic concepts of programming language, including the use of algorithms.
CO2: Understand "C" language constructs decision control and looping statements
CO3: Develop programs on arrays and strings.
CO4: Apply the concepts of functions, structures and unions.
CO5: Declare and use the concepts of pointers and file in C.

UNIT-I   (12 Hrs.)
General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations, I/O devices.
Introduction to Algorithms and Programming Languages: Algorithm, Flow Charts, Programming Languages – Binary Language, Assembly Language and High-level Language. Structured Programming Language, Translators –Compiler and Interpreter - Programming Exercises

UNIT-II   (12 Hrs.)
Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – 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 – Programming Exercises.

UNIT-III   (12 Hrs.)
Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings , string functions - Programming Exercises.

UNIT-IV   (12 Hrs.)
Functions: Introduction – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables : Local, Global – Recursive functions - Programming Exercises.

Structure, Union: Introduction – declaration and definition of Structure – Arrays of Structures – Union – Arrays of Unions Variables - Programming Exercises.

UNIT-V   (12 Hrs.)
Pointers: Introduction to Pointers – declaring Pointer Variables – Pointer Expressions– Null Pointers – Pointer and Arrays – Drawbacks of Pointers - Programming Exercises.

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file- Programming Exercises.

Co-Curricular Activities
- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Book
1. Programming with C by Reema Thareja

Reference Books
1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The "C" Programming language" - Pearson publications.

3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us "C" – BPB Publications.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
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Blueprint

Subject: Computer Science **Semester: I**
Course Title: Problem Solving using C **Course Code: 22CSCCPC13**
Time: 3 Hrs. **Max. Marks: 100**

SECTION – A

Answer **ALL** questions   **20 x 1 = 20M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
1	I	1	
2	I	1	
3	II	1	
4	II	1	
5	III	1	
6	III	1	**No. of questions to be set**
7	IV	1	RBT1 – 10
8	IV	1	RBT2 – 10
9	V	1	
10	V	1	
11	I	1	
12	I	1	
13	II	1	
14	II	1	
15	III	1	
16	III	1	
17	IV	1	
18	IV	1	
19	V	1	
20	V	1	

SECTION – B

Answer any **FOUR** questions   **4 x 8 = 32M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
21	I	8	**No. of questions to be set**
22	II	8	RBT1 – 3
23	III	8	RBT2 – 3
24	IV	8	
25	V	8	
26	I / II / III / IV / V	8	

SECTION – C

Answer any **FOUR** questions   **4 x 12 = 48M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
27	I	12	**No. of questions to be set**
28	II	12	RBT1 – 3
29	III	12	RBT2 – 3
30	IV	12	
31	V	12	
32	I / II / III / IV / V	12	

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SECTION – A

Answer **ALL** questions   **20 x 1 = 20 M**

1. The _____ performs arithmetic and logical operations
   A. CPU
   B. Arithmetic Logic Unit (ALU)
   C. Input unit
   D. Output unit

2. _____ translates the program one statement at a time.
   A. Interpreter
   B. Compiler
   C. Execution
   D. CNTR + F9

3. What are the entities whose values can be changed called?
   A. constant
   B. data type
   C. variable
   D. Tokens

4. What will be the output of the following C code?
```
#include <stdio.h>
  void main()
{
    int k = 0;
    for (k)
       printf("Hello");
}
```
   A. Hello
   B. nothing
   C. Varies
   D. Compile time error

5. What is the index number of the last element of an array with 9 elements?
   A. 9
   B. 8
   C. 0

D. Programmer-defined

6. What is the format specifier used to print a String in C Printf() or Scanf()?

   A. %c

   B. %C

   C. %s

   D. %d

7. A function which calls itself is called a ___ function.

   A. Self-function

   B. Auto function

   C. Recursive function

   D. Static function

8. What will be the output of the following C code?

   Void main()

   {

   Struct book

    {

      Int pages;

      Char name[10];

    }a;

   a.pages =10;

   strcpy(a.name,"Cbasics");

   Printf("%c=%d", a.name, a.pages);

   }

   A. empty string=10

   B. C=basics

   C. Cbasics=10

   D. error

9. In C a pointer variable to an integer can be created by the ___.

   A. Int p*;

   B. Int *p;

   C. Int &p;

   D. Int +p;

10. What is the function of the mode 'w+'?

   A. create text file for writing, do not discard previous contents if any

   B. create text file for update, do not discard previous contents if any

   C. create text file for writing, discard previous contents if any

   D. create text file for update, discard previous contents if any

11. _____ contains thousands of microprocessors.

12. A _____ is a program that converts source code into object code.

13. The format identifier '%i' is also used for _____ data.

14. The _____ statement allows us to transfer control of the program to the specified label.
15. _____ is used to store multiple values in a single variable, instead of declaring separate variables for each value.
16. _____ is a sequence of characters terminated with a null character '\0'.
17. _____ variables are declared outside all the function blocks and ____ variables are declared within a function block.
18. _____creates a data type that can be used to group items of possibly different types into a single type.
19. _____ is a variable that stores the memory address of another variable as its value.
20. When fopen() is not able to open a file, it returns _____.

SECTION – B

Answer any **FOUR** questions   **4 x 8 = 32 M**

21. Explain about the computer generations in detail.
22. Define an Algorithm. Write an algorithm and draw a flowchart to find the circumference of a circle.
23. Demonstrate the structure of a C program with example.
24. What is a String? Write a program using string functions in C.
25. Write a C program to find the factorial of a given number using recursion.
26. Explain in detail about the file operations in C with examples.

SECTION – C

Answer any **FOUR** questions   **4 x 12 = 48 M**

27. Demonstrate the block diagram of a computer with I/O devices.
28. Explain about the operators used in C with example.
29. Discuss about the looping statements used in C with example programs
30. Demonstrate an Array? Explain a C program for single dimensional array.
31. Elaborate the concept of structures with example in C.
32. Explain the concept of Pointers with example in C.