SRI KRISHNA INSTITUTE OF TECHNOLOGY,BANGALORE

COURSE PLAN

Academic Year 2019-20

Program:	B E – Computer Science & Engineering
Semester :	2
Course Code:	18CPS23
Course Title:	**C Programming for Problem Solving**
Credit / L-T-P:	4
Total Contact Hours:	40
Course Plan Author:	40

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Note : Remove "Table of Content" before including in CP Book
Each Course Plan shall be printed and made into a book with cover page
Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

A. COURSE INFORMATION

1. Course Overview

Degree:	BE	Program:	Ist year
Semester:	2	Academic Year:	2019-20
Course Title:	C PROGRAMMING FOR PROBLEM	Course Code:	18CPS23
Credit / L-T-P:	4-0-0	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	60 Marks
CIA Marks:	40	Assignment	1/Module
Course Plan Author:	Iranna A	Sign ..	Dt:
Checked By:	Dhananjay V	Sign ..	Dt:
CO Targets	CIA Target : ……. %	SEE Target:	……. %

Note: Define CIA and SEE % targets based on previous performance.

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute. Identify 2 concepts per module as in G.

Module	Content	Teaching Hours	Identified Module Concepts	Blooms Learning Levels
1	. **Introduction to computer Hardware and software:** Computer generations, computer types, bits, bytes and words, CPU, Primary memory, Secondary memory, ports and connections, input devices, output devices, Computers in a network, Network hardware, Software basics, software types. Overview of C: Basic structure of C program, executing a C program. Constant, variable and data types, Operators and expressions	8	Familiarize with writing of algorithms	L3 Apply, L3 Apply
2	Managing Input and output operations. Conditional Branching and Loops. Example programs, Finding roots of a quadratic equation, computation of binomial coefficients, plotting of Pascal's triangle.	8	Describe the different programming constructs and decomposition of problems into functions.	L3 Apply, L3 Apply
3	. Arrays: Arrays (1-D, 2-D), Character arrays and Strings, Basic Algorithms: Searching and Sorting Algorithms (Linear search, Binary search, Bubble sort and Selection sort).	8	Use and implement data structures like arrays and structures to obtain solutions	L3 Apply, L3 Apply
4	User Defined Functions and Recursion. Example programs, Finding Factorial of a positive integers and Fibonacci series.	8	Measure the use of pointers with simple applications and implement different data structures	L3 Apply, L3 Apply
5	Structure and Pointers, Preprocessor Directives	8	Summarize the different implementation techniques of a data structures	L3 Apply, L2 Understand
-	**Total**	**40**	-	-

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 – 30 minutes
2. Design: Simulation and design tools used – software tools used ; Free / open source
3. Research: Recent developments on the concepts – publications in journals; conferences etc.

Modules	Details	Chapters in book	Availability
A	**Text books (Title, Authors, Edition, Publisher, Year.)**	-	-
1, 2, 3, 4, 5	E. Balaguruswamy, Programming in ANSI C, 7 th Edition, Tata McGraw-Hill . Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.		In Lib / In Dept
B	**Reference books (Title, Authors, Edition, Publisher, Year.)**	-	-
1, 2,3	LSumitabha Das	?	In Lib
1,2,3	Gary J Bronson		In Library
5	Vikas Gupta: Computer Concepts and C Programming		In Library
5	R S Bichkar, Programming with C, University Press, 2012		In Library
C	**Concept Videos or Simulation for Understanding**	-	-
C1	www.justdial.com/Computer-Training		
C2	https://youtu.be/gfRIaBM2oa8		
C3	https://youtu.be/SPuS9UJF1lo		
C4	https://youtu.be/lc3RtR_345g		
C5	https://youtu.be/SKh_sXkPvVE		
D	**Software Tools for Design**	-	-
E	**Recent Developments for Research**	-	-
F	**Others (Web, Video, Simulation, Notes etc.)**	-	-
1	https://youtu.be/SKh_sXkPvVE		
2	https://youtu.be/gnYM_G1lLm0		

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.
Students must have learnt the following Courses / Topics with described Content . . .

Modules	Course Code	Course Name	Topic / Description	Sem	Remarks	Blooms Level
NIL	NIL	NIL	NIL	NIL	NIL	NIL

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.
Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Modules	Topic / Description	Area	Remarks	Blooms Level
1	Sorting Algorithms	Higher Study	NIL	L3 Apply
2	Linear and Nonlinear data structure	Gate	NIL	L3 Apply
2	Searching	Higher Study	NIL	L3 Apply
3	Linked list	Higher Study & Industries	NIL	L3 apply

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs. Identify a max of 2 Concepts per Module. Write 1 CO per Concept.

Modules	Course Code.#	Course Outcome **At the end of the course, student should be able to . . .**	Teach. Hours	Concept	Instr Method	Assessment Method	Blooms' Level
1	18CPS23.1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..	8	Simple algorithms	Lecture, discussion, problem solving	Viva, Assignment	L3 Apply
2	18CPS23.2	Construct a programming solution to the given problem using C.	8	If , while	Lecture / PPT,	Assignment, seminar	L3 Apply
3	18CPS23.3	Identify and correct the syntax and logical errors in C Program.	5	Types of errors	Lecture / PPT, problem solving	Assignment, seminar	L3 Apply
4	18CPS23.4	Modularize the given problem using functions and structures.	8	structures	Lecture, discussion	Question and answer, test	L3 Apply
5	18CPS23.5	Apply the simple data structure to create a simple menu program and the list of applications.	8	pointers	Discussion, lecture, ppt	Presentation, assignment	L3 Apply

2. Course Applications

Write 1 or 2 applications per CO.
Students should be able to employ / apply the course learnings to . . .

Modules	Application Area Compiled from Module Applications.	CO	Level
1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..	CO1	L3
2	Construct a programming solution to the given problem using C.	CO2	L3
3	Identify and correct the syntax and logical errors in C Program.	CO3	L3
4	Modularize the given problem using functions and structures.	CO4	L3
5	Apply the simple data structure to create a simple menu program and the list of applications.	CO5	L2
5	Collect the different data structure and Implement special functions.	CO5	L3

3. Mapping And Justification

CO – PO Mapping with mapping Level along with justification for each CO-PO pair.
To attain competency required (as defined in POs) in a specified area and the knowledge & ability required to accomplish it.

Modules	Mapping CO	Mapping PO	Mapping Level	Justification for each CO-PO pair	Level
-	**CO**	**PO**	-	**'Area': 'Competency' and 'Knowledge' for specified 'Accomplishment'**	-
1	**CO1**	PO1	2.4	The simple algorithms from the different domains such as mathematics, physics, etc. knowledge of engineering fundamentals are essential requirements in Electrical and electronics engineering. Substantially (highly-3) and merely (1) are mapped with PO1.	L3
1	CO1	PO2	2.4	The programming solution to the given problem using branching and looping knowledge of engineering fundamentals are essential requirements in computer science engineering. Substantially mapped with po1.	L3
1	CO1	PO4	2.5	To Develop C program using different searching and sorting techniques on arrays and strings are the essential requirements in computer science engineering. Substantially mapped with po1.	L2
1	CO1	PO5	2.5	To Modularize the given C program using functions and recursion statements are the knowledge of engineering fundamentals are essential requirements in Electrical and electronics engineering. Substantially (highly-3) mapped with PO1.	L3
1	CO1	PO12	2.4	To Develop C program using concepts of structures, pointers and pre-processor directives are the knowledge of engineering fundamentals are essential requirements in Electrical and electronics engineering. Substantially (highly-3) mapped with PO1.	L3
1	CO2	PO1	2.4	The basic concepts and implement the using C programs are essential requirements in Electrical and electronics engineering. Substantially (highly-3) mapped with PO1.	L3
1	CO2	PO2	2.4	The simple algorithms from the different domains such as mathematics, physics, etc. are the environments and platforms to create innovative solutions for given specifications to meet industrial	L4

				needs. Moderately (2) mapped with PO2.	
1	CO2	PO4	2.5	The programming solution to the given problem using branching and looping are the environments and platforms to create innovative solutions for given specifications to meet industrial needs. Moderately (2) mapped with PO2.	L3
1	CO2	PO6	1.7	To Develop C program using different searching and sorting techniques on arrays and strings are the environments and platforms to create innovative solutions for given specifications to meet industrial requirement. Moderately (2) mapped with PO2.	L3
1	CO2	PO12	2.4	To Modularize the given C program using functions and recursion statements are the knowledge of engineering and platforms to create innovative solutions for given specifications to meet industrial needs. Moderately (2) mapped with PO2.	L4
2	**CO3**	PO1	2.4	To Develop C program using concepts of structures, pointers and pre-processor directives are the knowledge of engineering environments and platforms to create innovative solutions for given specifications to meet industrial needs. Moderately (2) mapped with PO2.	L3
2	CO3	PO2	2.4	The basic concepts and implement the using C programs are essential requirements in Electrical and electronics engineering environments and platforms to create innovative solutions for given specifications to meet industrial needs. Moderately (2) mapped with PO2.	L3
2	CO3	PO3	2.5	The basic concepts and implement the using C programs to create, select and apply appropriate techniques, resources, and modern engineering and IT tools engineering activities with an understanding of the limitations. Moderately (2) mapped with PO5.	L3
2	CO3	PO12	2.4	The basic concepts and implement the using C programs are the function effectively as an individual and team members helps to develop multidisciplinary settings. Substantially (highly-3) mapped with PO9.	L3
2	**CO4**	PO1	2.4	The basic concepts and implement the using C programs to communicate effectively on complex engineering activities with the engineering community. Substantially (highly-3) mapped with PO10.	L3
2	CO4	PO2	2.4	The basic concepts and implement the using C programs to learn lifelong to create, develop multidisciplinary projects. Moderately (2) mapped with PO12	L3
2	CO4	PO3	2.5	The simple algorithms from the different domains such as mathematics, physics, etc. are the core concepts of Electrical and electronics engineering to design, develop and validate computing systems. Moderately (2) mapped with PSO1	L3
2	CO4	PO12	2.4	To Develop C program using different searching and sorting techniques on arrays and strings are core concepts of Electrical and electronics engineering to design, develop and validate computing systems. Moderately (2) mapped with PSO1.	L3
3	**CO5**	PO1	2.4	To Modularize the given C program using functions and recursion statements are the core concepts of Electrical and electronics engineering to design, develop and validate computing systems. Moderately (2) mapped with PSO1.	L3
3	CO5	PO2	2.4	To Develop C program using concepts of structures, pointers and pre-processor directives are the core concepts of Electrical and electronics engineering to design, develop and validate computing systems. Moderately (2) mapped with PSO1.	L3
3	CO5	PO4	2.5	The simple algorithms from the different domains such as mathematics, physics, etc. are the environments and platforms to create innovative solutions for given specifications to meet industrial needs. Moderately (2) mapped with PSO2.	L3
3	CO5	PO12	2.4	To Develop C program using different searching and sorting techniques on arrays and strings are environments and platforms to create innovative solutions for given specifications to meet industrial requirement. Moderately (2) mapped with PSO2.	L3

4. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

Modules	CO.#	Course Outcomes — At the end of the course student should be able to . . .	Program Outcomes															Level
-	-		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	Level
1	18CPS23.1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..	2.4	2.4	-	2.5	2.5	-	-	-	-	-	-	2.4				L3
2	18CPS23.2	Construct a programming solution to the given problem using C.	2.4	2.4	-	2.5	-	1.7	-	-	-	-	-	2.4				L3
3	18CPS23.3	Identify and correct the syntax and logical errors in C Program.	2.4	2.4	2.5	-	-	-	-	-	-	-	-	2.4				L3
4	18CPS23.4	Modularize the given problem using functions and structures.	2.4	2.4	2.5	-	-	-	-	-	-	-	-	2.4				L3
5	18CPS23.5	Apply the simple data structure to create a simple menu program and the list of applications.	2.4	2.4	-	2.5	-	-	-	-	-	-	-	2.4				L3
5	18CPS23.6	Collect the different data structure and Implement special functions.	-	2.4	2.5	2.5	2.5	-	-	-	-	-	-	-				L3
		AVG	2.4	2.4	2.5	2.5	2.5	2.5	1	1	1	1		2.4				-
-		Average attainment (1, 2, or 3)																
-	PO, PSO	1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design																

5. Curricular Gap and Content

Topics &contents not covered (from A.4), but essential for the course to address POs and PSOs.

Modules	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
NIL	NIL	NIL	NIL	NIL	NIL

6. Content Beyond Syllabus

Topics &contents required (from A.5) not addressed, but help students for Placement, GATE, Higher Education, Entrepreneurship, etc.

Modules	Gap Topic	Area	Actions Planned	Schedule Planned	Resources Person	PO Mapping
NIL	NIL	NIL	NIL	NIL	NIL	NIL

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

Modules	Title	Teach. Hours	CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE	CO	Levels
1	Introduction	10	2	-	-	1	1	2	CO1,CO2	L3
2	Managing Input and output operations	10	2	-	-	1	1	2	CO3,CO4	L3
3	arrays	10	-	2	-	1	1	2	CO1,CO5	L3
4	User Defined Functions and Recursion	10	-	2	2	1	1	2	CO3,CO4	L3
5	structure	10	-	-	2	1	1	2	CO2, CO5	L2
-	**Total**	**54**				**5**	**5**	**10**	**-**	**-**

2.Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Modules	Evaluation	Weightage in Marks	CO	Levels
1, 2	CIA Exam – 1	30	CO1, CO2, CO3,CO4	L3,L3,L3,L3
3, 4	CIA Exam – 2	30	CO2, CO3, CO4,C05	L3,L3,L3,L3
5	CIA Exam – 3	30	CO2,CO3,CO4	L2,L2
1, 2	Assignment - 1	10	CO1, CO2, CO3,Co4	L3,L3,L3,L3
3, 4	Assignment - 2	10	CO2, CO3, CO4,C05	L3,L3,L3,L3
5	Assignment - 3			
1, 2	Seminar - 1	NIL		
3, 4	Seminar - 2	NIL	-	-

5	Seminar - 3	NIL	-	-
1, 2	Quiz - 1	NIL	-	-
3, 4	Quiz - 2	NIL	-	-
5	Quiz - 3	NIL	-	-
1 - 5	Other Activities – Mini Project	-		
	Final CIA Marks	**40**	**-**	**-**

D1. TEACHING PLAN - 1

Module - 1

Title:	INTRODUCTION	Appr Time:	10 Hrs
A	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..	CO1	L3
		CO2	L3
B	***Course Schedule***	-	-
Class No	**Module Content Covered**	**CO**	**Level**
1	Introduction	CO1	L2
2	Computer generations, computer types, bits, bytes and words	CO1	L2
3	CPU, Primary memory, Secondary memory	CO1	L3
4	ports and connections, input devices, output devices	CO1	L3
5	Computers in a network, Network hardware, Software basics, software types.	CO1	L2
6	Basic structure of C program	CO2	L2
7	Executing a C program. Constant, variable and data types	CO2	L2
8	Operators and expressions	CO2	L2
C	**Application Areas**	**CO**	**Level**
1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..	CO1	L3
2	Construct a programming solution to the given problem using C.	CO2	L3
D	**Review Questions**	-	-
1	What is Computer? List and explain the generations of Computer.	CO1	L3
2	List and explain the types of Computer	CO1	L3
3	Draw a neat block diagram of Computer and explain	CO1	L2
4	Differentiate between Primary memory and Secondary memory	CO1	L2
5	What is network? List and explain types of network.	CO1	L3
6	What is Software? Explain the two types of software.	CO1	L2
7	What is the purpose of pseudo code? What does pseudo code consist of?	CO1	L2
8	What is an algorithm? Explain the characteristics of an algorithm?	CO1	L2
9	Differentiate between algorithm & flowchart.	CO1	L3
10	Write an algorithm and draw a flowchart to find the largest of three numbers.	CO2	L2
11	Write an algorithm and draw a flowchart to find roots of quadratic equation.	CO2	L2
12	Write an algorithm and draw a flowchart to print all prime numbers between two numbers.	CO2	L2
E	**Experiences**	-	-
1	Illustrate simple algorithms from the different domains such as mathematics, physics, etc..		

Module – 2

Title:	Managing Input and output operations	Appr Time:	10 Hrs
A	*Course Outcomes*	-	**Blooms**
-		-	**Level**
1	Construct a programming solution to the given problem using C.	CO3	L3
B	*Course Schedule*	-	-
Class No	**Module Content Covered**	**CO**	**Level**
9	Managing Input operation	CO3	L3
10	Managing output operation	CO3	L3
11	Conditional Branching and Loops	CO3	L3
12	Example programs	CO3	L3
13	Finding roots of a quadratic equation	CO3	L3
14	Computation of binomial coefficients	CO3	L3
15	Plotting of Pascals triangle	CO4	L2
16	Example programs	CO4	L2
c	**Application Areas**	**CO**	**Level**
1	Construct a programming solution to the given problem using C.	CO3	L3
d	**Review Questions**	-	-
1	Explain the formatted I/O functions of C language with syntax and example	CO3	L3
2	Explain printf() function with an example	CO3	L3
3	Explain the format of scanf() function with examples	CO3	L3
4	Explain the getch( ) and gets( ) functions with example.	CO3	L2
5	Explain the putch( ) and puts( ) functions with example	CO3	L2
6	Write a C program to print numbers from 4 to 9 and their squares using printf( ) function	CO3	L3
7	Write a program that takes an integer, a char, and a string from the user and display it on the screen	CO3	L2
8	Write a C program that takes the radius of the circle and calculates the area and perimeter of circle	CO4	L2
9	Write a C program that takes from the user and calculates their sum and average	CO3	L3
10	Write a C program that takes text from the user by using gets( ) and print that text on the screen using puts() function	CO4	L2
e	**Experiences**	-	-
1	Construct a programming solution to the given problem using C.		

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	18CPS23	Sem:	II	Marks:	30	Time:1	60 minutes			
Course:	Cryptography and Network Security And Cyber Law									
-	**-**	**Note: Answer any 2 questions, each carry equal marks.**						**Marks**	**CO**	**Level**
1	a	What is Computer? List and explain the generations of Computer.						7	CO1`	L3
	b	List and explain the types of Computer						8	CO2	L2
2	a	Draw a neat block diagram of Computer and explain						7	CO1	L3
	b	Explain the formatted I/O functions of C language with syntax and example						8	CO2	L3
3	a	Explain printf() function with an example						7	CO3	L3
	b	Explain the format of scanf() function with examples						8	CO3	L2
4	a	Explain the getch( ) and gets( ) functions with example.						8	CO4	L3
	b	Write a program that takes an integer, a char, and a string from the user						7	CO3	L2

		and display it on the screen			

b. Assignment -1

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	18CPS23	Sem:	II	Marks:	10/ 10	Time:	90 – 120 minutes
Course:	C Programming for Problem Solving						

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Marks	CO	Level
1		What is Computer? List and explain the generations of Computer.	5	CO1	L2
2		List and explain the types of Computer	5	CO2	L2
3		Draw a neat block diagram of Computer and explain	5	CO2	L2
4		Differentiate between Primary memory and Secondary memory	7	CO2	L2
5		What is network? List and explain types of network.	8	CO1	L3
6		What is Software? Explain the two types of software.	5	CO2	L2
7		What is the purpose of pseudo code? What does pseudo code consist of?	7	CO3	L3
8		What is an algorithm? Explain the characteristics of an algorithm?	7	CO3	L2
9		Differentiate between algorithm & flowchart.	6	CO4	L2
10		Write an algorithm and draw a flowchart to find the largest of three numbers.	8	CO4	L3
11		Write an algorithm and draw a flowchart to find roots of quadratic equation.	7	CO4	L3
12		Write an algorithm and draw a flowchart to print all prime numbers between two numbers.	7	CO4	L2
13		Draw a neat block diagram of Computer and explain	7	CO1	L3
14		Explain the formatted I/O functions of C language with syntax and example	10	CO1	L3

D2. TEACHING PLAN - 2

Module – 3

Title:	Arrays	Appr Time:	10 Hrs
a	**Course Outcomes**	-	**Blooms**
	The student should be able to:	-	**Level**
	Identify and correct the syntax and logical errors in C Program	CO5	L3
b	**Course Schedule**		
Class No	**Module Content Covered**	**CO**	**Level**
21	1- D Arrays	CO5	L2,L3
22	2- D Arrays	CO5	L3
23	Character arrays and Strings	CO5	L3
24	Example programs	CO5	L3
25	Searching Algorithms: Linear search	CO5	L3
26	Searching Algorithms : Binary search	CO1	L2,L3
27	Sorting Algorithms: Bubble sort	CO1	L3
28	Sorting Algorithms: Selection sort.	CO4	L3
c	**Application Areas**	**CO**	**Level**
1	Identify and correct the syntax and logical errors in C Program	CO5	L3
d	**Review Questions**	-	-
1	What is an array? What are its advantages and disadvantages?	CO5	L2
2	Differentiate between array and ordinary variables	CO5	L3
3	Explain the declaration of single and multidimensional arrays with examples	CO5	L3
4	Explain the initialization of single and multidimensional arrays with	CO5	L3

		examples		
5		What is an array? How are they declared in C? What are the rules to be followed while using arrays?	CO5	L3
6		With an example, explain how the elements of two dimensional arrays stored in row major and column major order.	CO5	L2
7		Define string? List out all the string handling functions in C. Explain any two with example.	CO5	L2
8		How are strings processed in C? How are they declared and initialized? Explain with example.	CO5	L3
e		**Experiences**	-	-
1		Identify and correct the syntax and logical errors in C Program		

Module – 4

Title:			Appr Time:	10 Hrs
a		***Course Outcomes***	-	**Blooms**
-		The student should be able to:	-	**Level**
1		Modularize the given problem using functions and structures	CO4	L3
b		***Course Schedule***		
Class No		**Module Content Covered**	**CO**	**Level**
21		User Defined Functions	CO2	L2
22		Function calls	CO2	L2
23		Category of function	CO2	L2
27		Nesting of function	CO1	L3
28		Recursion	CO2	L3
29		Example programs	CO3	L3
31		Finding Factorial of a positive integers	CO3	L3
32		Fibonacci series.	CO4	L3
c		**Application Areas**	**CO**	**Level**
1		Modularize the given problem using functions and structures	CO5	L2
d		**Review Questions**	-	-
33		What is function? What are the needs of function? What are its advantages?	CO2	L2
34		Explain the function declaration with a suitable example.	CO2	L2
35		What is function? Explain the different types of functions based on parameter.	CO2	L2
36		What are the elements of functions? Explain.	CO1	L3
37		Explain the categories of functions with examples.	CO2	L3
38		What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?	CO3	L3
e		**Experiences**	-	-
1		Modularize the given problem using functions and structures		

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:		Sem:	II	Marks:	30	Time:	75 minutes		
Course:		C Programming for Problem Solving							
-	**-**	**Note: Answer any 2 questions, each carry equal marks.**					**Marks**	**CO**	**Level**
1	a	What is an array? What are its advantages and disadvantages?					7	CO5	L2
	b	Differentiate between array and ordinary variables					8	CO5	L2
1	a	Explain the declaration of single and multidimensional arrays with examples					7	CO2	L3

	b	Explain the initialization of single and multidimensional arrays with examples	8	CO2	L3
3	a	What is function? Explain the different types of functions based on parameter.	7	CO2	L2
	b	What are the elements of functions? Explain.	8	CO1	L3
4	a	Explain the categories of functions with examples.	7	CO2	L3
	b	What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?	8	CO3	L3

b. Assignment – 2

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions						
Crs Code: 18CPS23	Sem:	II	Marks:	10	Time:	90 – 120 minutes
Course:	C Programming for Problem Solving					

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Marks	CO	Level
1		What is an array? What are its advantages and disadvantages?	7	CO5	L3
2		Differentiate between array and ordinary variables	8	CO5	L3
3		Explain the declaration of single and multidimensional arrays with examples	7	CO5	L2
4		Explain the initialization of single and multidimensional arrays with examples	6	CO5	L2
5		What is function? Explain the different types of functions based on parameter.	6	CO5	L2
6		What are the elements of functions? Explain.	8	CO2	L2
7		Explain the categories of functions with examples.	7	CO2	L3
8		What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?	8	CO2	L3
9		What are the elements of functions? Explain.	7	CO1	L3
10		Explain the categories of functions with examples.	8	CO2	L3
11		What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?	7	CO3	L2

D3. TEACHING PLAN – 3

Module – 5

Title:	IT act aim and objectives		Appr Time:	10 Hrs
a	Course Outcomes		-	Blooms
-	The student should be able to:		-	Level
1	Apply the simple data structure to create a simple menu program and the list of applications.		CO4	L2
2	Collect the different data structure and Implement special functions		CO5	L2
b	Course Schedule			
Class No	Module Content Covered		CO	Level
41	Structure		CO4	L2
42	Arrays of Structure		CO2	L2
43	Arrays within Structure		CO2	L2
44	Example programs		CO2	L2
45	Pointers		CO1	L2
46	Pointer expression		CO2	L2
47	Array of pointers		CO3	L2
48	Preprocessor Directives		CO3	L2

			CO5	L2
c	**Application Areas**		**CO**	**Level**
1	Apply the simple data structure to create a simple menu program and the list of applications.		CO9,CO10	L2
d	**Review Questions**		-	-
1	Explain the declaration of single and 2-dimensional arrays with examples		CO2	L2
2	Write a C program to implement linear search.		CO2	L2
3	Write a C program to implement Selection Sort.		CO2	L2
4	Explain strlen(), strcpy(), strcat(), strcmp(), strrev() with examples.		CO1	L2
5	What is function? Explain the function declaration with a suitable example.		CO4	L2
7	**Experiences**		-	-
1	Apply the simple data structure to create a simple menu program and the list of applications.			

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs Code:	18CPS23	Sem:	II	Marks:	30	Time:	60 minutes		
Course:	C Programming for Problem Solving								
-	-	**Note: Answer any 2 questions, each carry equal marks.**					**Marks**	**CO**	**Level**
1	a	Explain memory allocation functions used in C with example program					7	CO2	L2
	b	Write a program using pointers in C to print a string in reverse order					8	CO4	L2
2	a	Explain briefly about the header files available with C.					10	CO2	L2
	b	Explain any two preprocessor directives.					5	CO1	L2
3	a	Explain file inclusion directives with example.					7	CO5	L2
	b	Explain defining macro with example					8	CO3	L2
4	a	Explain defining macro with arguments with example.					8	CO3	L2
	b	Explain defining nested macros with example.					7	CO4	L2

b. Assignment – 3

Note: A distinct assignment to be assigned to each student.

		Model Assignment Questions						
Crs Code:	18CPS23	Sem:	II	Marks:	5 / 10	Time:	90 – 120 minutes	
Course:	C Programming for Problem Solving							
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.								
SNo	**USN**	**Assignment Description**				**Marks**	**CO**	**Level**
1		Explain array of structures with example.				6	CO4	L2
2		Write a C program to count the number of characters, Number of lines and number of white spaces from a file.				8	CO4	L2
3		Create a structure st_record having member"s student Name (Sname) and students marks (Smarks). Write a C program which reads name and marks of two students and compare whether both students are same				7	CO5	L2
4		Write a program to find the net salary of an employee if gross salary and deduction are known				6	CO3	L2
5		Mention syntax and give an example for the following: i) Structure definition ii) Structure variable declaration				8	CO5	L2
6		Write a program that takes roll numbers, names, and marks of three students in three different subjects as input and prints total marks and percentage of each student				7	CO3	L2
7		Implement structures to read, write and compute average marks and display the students scoring above and below average marks for class of N students.				7	CO3	L2
8		Write a program that takes book id, author name, publisher				7	CO4	L2

		name, and price for a book as input and prints the same information as output			
9		What are pointers? Why is it necessary?	8	CO2	L2

C-PROGRAMMING FOR PROBLEM SOLVING (18CPS13/23)

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

MODULE 1

1 a Explain different types of computer.   (6Marks)

b What is Software? Explain different types of software.   (6 Marks)

c With a neat diagram explain the basic structure of a computer   (8 Marks)

OR

2 a Explain a general structure of C program with an example.   (8 Marks)

b What is a token? What are different types of tokens available in C language? Explain.   (8 Marks)

c Evaluate the following expressions:

   i)   22 + 3 < 6 && !5 || 22 = =7 && 22 – 2 > +5   (4 Marks)

   ii)   a + 2 > b || !c && a = = d *a – 2 < = e Where a=11, b=6, c=0, d = 7 and e=5.

MODULE 2

3. a Explain formatted input and output statement with examples.   (6 Marks)

b Explain if, if-else, nested if-else and cascaded if-else with examples and syntax.   (8 Marks)

c An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.   (6 Marks)

OR

4   a   Explain the different types of loops in C with syntax.   (8 Marks)

        b   Show how break and continue statements are used in a C-program, with example.   (4 Marks)

	c	Develop a C program to generate and plot the Pascal triangle.	(8 Marks)

MODULE 3

5	a	What is an array? How a single dimension and two dimension arrays are declared and initialized?	(12 Marks)
	b	Write an algorithm and develop a C program that reads N integer numbers and arrange them in ascending order using selection Sort.	(08 Marks)

OR

6	a	Explain string manipulation library functions with their syntaxes. Write a program to check whether a string is palindrome or not.	(12 Marks)
	b	Write an algorithm and develop a C program to search an integer from N numbers in ascending order using binary searching technique	(8 Marks)

MODULE 4

7.	a	What is function? Explain different classification of user defined functions based on parameter passing and return type with examples	(12 Marks)
	b	Write a c-program using functions to generate the Fibonacci series.	(8 Marks)

OR

8	a	What is recursion? Explain. Write a c-program using recursive function for Binary to Decimal Conversion.	(10 Marks)
	b	Write a program in C using functions to swap two numbers using global variables concept and call by reference concept.	(6 Marks)
	c	Write a c-program using function to check whether the given number is prime or not.	(4 Marks)

MODULE 5

9	a	What is structure? Explain C syntax of structure declaration with example.	(6 Marks)
	b	Explain structure within a structure with an example.	(6 Marks)
	c	Write a c-program using structures to read, write, compute average - marks and display the students scoring above and below the average marks for a class of N students.	(8 Marks)

OR

10	a	What is a pointer? Explain how the pointer variable declared and initialized.	(4 Marks)
	b	Write a program in C to find the sum and mean of all elements in an array using pointers.	(6 Marks)

	c	Explain different categories of pre-processor directives used in C.			(10 Marks)

Course:		C Programming for Problem Solving					Month / Year	2018	
Crs Code:		18CPS23	Sem:	II	Marks:	60	Time:	180 minutes	
-	**Note**	Answer all FIVE full questions.					**Marks**	**CO**	**Level**
1	a	What is function? What are the needs of function? What are its advantages?					8	CO1	L2
	b	Explain the function declaration with a suitable example.					8	CO2	L3
		OR							
2	a	Explain the categories of functions with examples.					8	CO2	L2
	b	What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?					8	CO2	L2
3	a	What are the different ways of passing parameters to functions? Explain.					8	CO3	L3
	b	Explain the difference between "call by value" and "call by reference" with suitable examples					8	CO3	L2
		OR							
4	a	Write a C program to find standard deviation of n values using functions.					8	CO4	L2
	b	Write a C program that uses a function to sort an array of integers.					8	CO4	L2
5	a	Write a C function to find maximum and minimum elements of one dimensional array.					8	CO5	L2
	b	Write a C function to find the product of two matrices.					8	CO5	L3
		OR							
6	a	Explain the declaration of single and 2-dimensional arrays with examples					8	CO5	L3
	b	Write a C program to implement linear search.					8	CO5	L2
7	a	Write a C program to implement Selection Sort.					6	CO3	L2
	b	Explain strlen(), strcpy(), strcat(), strcmp(), strrev() with examples.					5	CO4	L3
		OR							
	c	Explain the use of break and continue statement with examples.					5	CO5	L2
8	a	What are the verities of if statement? Explain.					5	CO4	L2
	b	Write a C program to check whether the entered number is even or odd					6	CO2	L3
	c	What is looping? What are the different types of looping? Explain					5	CO5	L3
9	a	Differentiate between while and do-while loop. Give example for each					8	CO5	L2
	b	Write a C program to compute the binomial coefficients by reading the value of n					8	CO3	L2
		OR						CO3	
10	a	Write a C program to plot a Pascal"s triangle by reading the value of n					8	CO4	L2
	b	Write a C program to generate the Fibonacci sequence.					8	CO5	L2

2. SEE Important Questions

Course:		C Programming for Problem Solving					Month / Year		
Crs Code:		18CPS23	Sem:	II	Crs Code:	18CPS23	Sem:	II	
	Note	Answer all FIVE full questions. All questions carry equal marks.					-	-	
Module	Qno.						**Marks**	**CO**	**Year**
1	1	Explain the categories of functions with examples.					8	CO1	
1	2	What is user defined function? What is the need of user-defined function? What is the need of user defined? Why user defined functions are required for large and complex problems?					8	CO1	
1	3	What are the different ways of passing parameters to functions? Explain.					8	CO1	

1		Explain memory allocation functions used in C with example program	8	CO1	
1	4	Write a program using pointers in C to print a string in reverse order	8	CO2	
1	5	Explain briefly about the header files available with C.	8	CO1	
11	6	Explain any two preprocessor directives.	7	CO1	
1		Explain file inclusion directives with example.	8	CO1	
1	7	Explain defining macro with example	8	CO1	
1	8	Explain defining macro with arguments with example.	8	CO1	
1	9	Explain defining nested macros with example.	8	CO1	
1	10	Explain memory allocation functions used in C with example program	7	CO1	
1	11	Write a program using pointers in C to print a string in reverse order	5	CO1	
1	12	Write a C program to find out largest of three numbers	10	CO2	
1	13	Explain any three bitwise operators with an example each	6	CO2	
2	14	List bitwise operators and give example for any two	6	CO2	
2	15	Explain the concept of conditional operator and comma operator in C	8	CO2	
2	16	What are unary and binary operators? Explain with examples.	6	CO2	
2	17	Explain the precedence and associativity of arithmetic operators with examples	8	CO2	
2	18	Write a C program in which comma works as the operator as well as separator	8	CO2	
2	19	Write a C program to find the largest of three numbers using conditional operators	8	CO2	
2	20	Define expression. Explain different types of Expressions	6	CO2	
2	21	How do you classify operators?	5	CO2	
2	22	Differences between ++X and X++ operators	8	CO2	
2	23	What is type conversion? Explain with example the types of type conversion.	7	CO2	
2	24	What is Computer? List and explain the generations of Computer.	6	CO2	
2	25	List and explain the types of Computer	5	CO3	
2	26	Draw a neat block diagram of Computer and explain	8	CO3	
2	27	Differentiate between Primary memory and Secondary memory	5	CO3	
2	28	What is network? List and explain types of network.	5	CO3	
2	29	What is Software? Explain the two types of software.	8	CO4	
2	30	What is the purpose of pseudo code? What does pseudo code consist of?	6	CO4	
2	31	What is an algorithm? Explain the characteristics of an algorithm?	7	CO4	
2	32	Differentiate between algorithm & flowchart.	5	CO4	
2	33	Write an algorithm and draw a flowchart to find the largest of three numbers.	6	CO4	
2	34	Write an algorithm and draw a flowchart to find roots of quadratic equation.	7	CO4	
2	35	Write an algorithm and draw a flowchart to print all prime numbers between two numbers.	5	CO4	
2	36	Write basic structure of C program and explain its different sections	8	CO4	
2	37	What is the purpose of a comment? How does a comment begin and end?	6	CO4	
3	38	What is constant? Explain different types of constants with examples.	6	CO5	
3	39	Define variables. List the rules for naming variables.	7	CO5	
3	40	Why do you declare variables? Explain with suitable example.	6	CO5	
3	41	Differentiate between variables and constants.	8	CO2	
3	42	List all the operators used in C language and evaluate following expressions: (Jan--2019) i) x = a – b / 3 c * 2 - 1 when a= 9, b= 12, c= 3 ii) 10 != 10 || 5 < 4 && 8	8	CO4	
3	43	What is data type? Explain the primitive data types that are supported by C	8	CO2	

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4	44	Distinguish between sting constant and character constant with example.	8	CO1	
4	45	What are the rules to be followed to declare an identifier with example?	8	CO5	
4	46	Write a note on different types of Type conversions with an example/program for each	5	CO3	
4	47	Define C- tokens. List and explain different C- tokens.	7	CO3	
4	48	Write a C program to convert number of days into months and days. (Hint: Assume a month has 30 days) (For e.g. 45 days = 1 month and 15 days).	8	CO4	
4	49	Write a note on operator precedence and Associativity.	8	CO2	
4	50	Write a C program to compute simple Interest. Draw the flowchart for the same.	8	CO4	
5	51	Explain the C operators with examples	8	CO2	
5	52	Explain different unary operators in C.	8	CO1	
5	53	Explain the assignment statement. How is it different from algebraic expression? Substantiate with examples	6	CO5	
5	54	Explain the increment and decrement operators with example	8	CO3	
5	55	Explain the relational operators in C with examples.	8	CO3	
5	57	List and explain the types of Computer	5	CO4	

Course Outcome Computation

Academic Year:

Odd / Even semester

INTERNAL TEST					T1						T2			
Course Outcome	CO1		CO2		CO3		CO4		CO5		CO5			
QUESTION NO	Q1	LV	Q2	LV	Q3	LV	Q1	LV	Q2	LV	Q3	LV		
MAX MARKS														
USN-1														
USN-2														
USN-3														
USN-4														
USN-5														
USN-6														
Average CO Attainment														

LV Threshold : 3:>60%, 2:>=50% and <=60%, 1: <=49%
CO1 Computation :(2+2+2+3)/4 = 10/4=2.5

PO Computation

Program Outcome	PO1		PO3		PO3		PO1		PO12		PO12		
Weight of CO - PO	3		1		3		2		2		3		
Course Outcome	CO1		CO2		CO3		CO4		CO5		CO5		
Test/Quiz/Lab			T1						T2				
QUESTION NO	Q1	LV	Q2	LV	Q3	LV	Q1	LV	Q2	LV	Q3	LV	
MAX MARKS													
USN-1													
USN-2													
USN-3													
USN-4													
USN-5													
USN-6													

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Average Attainment	CO	