Roll No.:
(To be filled in by the candidate)

# PSG POLYTECHNIC COLLEGE, COIMBATORE - 641 004

## SEMESTER EXAMINATIONS, FEB 2022

## DIP – DCN/DECE/DCE    SEMESTER: 1

## C21/G21/Z21105 – PROBLEM SOLVING AND C PROGRAMMING

**Time: 3 Hours**                                                                    **Max. Marks: 75**

**Instructions:**
1. Answer all questions by choosing either (a) division or (b) division.
2. Each question carries 15 marks.
3. Division (a) and (b) have three subdivisions (i), (ii) and (iii) which carries 2 marks, 3 marks and 10 marks respectively.

| Q. No. | Div. | Sub. div. | Questions | Bloom's Taxonomy | Marks | Total Marks | Course Outcome |
|---|---|---|---|---|---|---|---|
| 1 | a | i | Define algorithm. | R | 2 | 15 | CO 1 |
| | | ii | Write short notes on program development environment. | R | 3 | | |
| | | iii | Briefly explain about the program development cycle with neat diagram. | U | 10 | | |
| | OR | | | | | | |
| | b | i | What is flowchart? | R | 2 | | |
| | | ii | What is the importance of analyzing and defining problem? | U | 3 | | |
| | | iii | Discuss about the types of programming languages in detail. | A | 10 | | |
| 2 | a | i | Define variable and its types. | R | 2 | 15 | CO 2 |
| | | ii | Predict the output.<br>`#include <stdio.h>`<br>`int main( )`<br>`{`<br>`int a = 1;`<br>`if (a--)`<br>`  printf("True\n");`<br>`if (++a)`<br>`  printf("False\n");`<br>`return 0;`<br>`}` | A | 3 | | |
| | | iii | Explain about the formatted input and output function with example. | A | 10 | | |
| | OR | | | | | | |
| | b | i | Define constants. Give examples. | R | 2 | | |
| | | ii | Draw the structure of C Programming. | U | 3 | | |
| | | iii | Sketch the syntactical diagram for nested if statement and discuss with example. | A | 10 | | |

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|---|---|---|---|---|---|---|---|
| 3 | a | i | Define array. | R | 2 | 15 | CO 3 |
| | | ii | Predict the output.<br>#include<studio.h><br>#include<string.h><br>int main()<br>{<br>char str1[20] = "Hello", str2[20] = " world";<br>printf("%s", strcpy(str2, strcat(str1, str2)));<br>return 0;<br>} | A | 3 | | |
| | | iii | Elaborate call by value and call by reference in detail with an example. | A | 10 | | |
| | **OR** | | | | | | |
| | b | i | Define recursion. | R | 2 | | |
| | | ii | How do arrays get passed to functions in C? | U | 3 | | |
| | | iii | Illustrate string handling functions with example. | A | 10 | | |
| 4 | a | i | What do you mean by static variables? | R | 2 | 15 | CO 4 |
| | | ii | Compare structure and union. | U | 3 | | |
| | | iii | Illustrate in detail about storage classes in C. | A | 10 | | |
| | **OR** | | | | | | |
| | b | i | Define Structure. | R | 2 | | |
| | | ii | What is Arrays of structures? | R | 3 | | |
| | | iii | Discuss about arrays within structures with suitable example. | A | 10 | | |
| 5 | a | i | How will you apply FREE function? | A | 2 | 15 | CO 5 |
| | | ii | List out the advantages of pointers. | U | 3 | | |
| | | iii | Explain Pointers and functions with example. | A | 10 | | |
| | **OR** | | | | | | |
| | b | i | What is pointer? | R | 2 | | |
| | | ii | Define linked list. | R | 3 | | |
| | | iii | Discuss in detail about the concept of MALLOC and CALLOC with suitable example. | A | 10 | | |
| | | | **Total** | | **75** | | |

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