Roll No. 2022UG3008

**Indian Institute of Information Technology Ranchi**

**Department of ECE/CSE**

**B. Tech Mid Semester Examination – Autumn Semester 2022-23**

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| **Semester: 1st** | **Branch: ECE/CSE/ECE(ES&IoT)/CSE(DS&AI)** |
| **Course Code: CS 1001** | **Course Name: Computer Programming: Concepts and Practices** |

**QUESTION PAPER**

**Duration: 2 hrs.** **Max Marks: 60**

**Instructions:**
(1) Answer all the questions. Number in [ ] indicates marks.
(2) Scientific calculator is allowed in the examination.
(3) Any missing data can be assumed suitably.
(4) All symbol have there usual meaning.

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| 1 | (a) | What will be the output of the following program?<br>#include <stdio.h><br>void main()<br>{ printf("%d", printf("IIITRanchi")); } | [2] |
| | (b) | If an integer needs four bytes of storage, then the maximum value of a signed integer is? | [2] |
| | (c) | What will be the output of the following program?<br>#include <stdio.h><br>void main()<br>{ printf("%c", 120); } | [2] |
| | (d) | The following program fragment results in the printing of:<br>for(i=1; i<20; i +=3);<br>printf("%d",i); | [3] |
| | (e) | The following program fragment results in the printing of:<br>for(i=1; i<5; ++i)<br>if (i==3) continue;<br>else printf("%d", i); | [3] |
| | (f) | Write the differences between **break** and **continue** statements with suitable examples. | [3] |
| 2 | (a) | Explain the syntax of writing 'for' loop and write a program to display the following pattern: for n = 5<br>*********<br>*******<br>*****<br>***<br>*<br>***<br>*****<br>*******<br>********* | [6] |

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| | (b) | Write a pseudocode to take five integer inputs and compute their average. Convert the average into a 2-decimal point round floating figure. Display the output. | |
| | (c) | You are climbing a staircase. It takes 'n' steps to reach the top. Each time you can either climb 1 or 2 steps. In how many distinct ways can you climb to the top? Write a C program to provide the solution for the same.<br><br>Example:<br>Input: n = 3<br>Output: 3<br>Explanation: There are three ways to climb to the top.<br>i. 1 step + 1 step + 1 step<br>ii. 1 step + 2 steps<br>iii. 2 steps + 1 step | [6] |
| 3 | (a) | Write a C program for a menu based calculator for addition, subtraction, square root using switch case.<br>When should we use a goto statement in C? Is it preferable? Explain | [8+2] |
| | (b) | Evaluate the following:<br>`#include <stdio.h>`<br>`void main()`<br>`{`<br>`int a = 1, value;`<br>`value = a++ + ++a+ ++a;`<br>`printf("%d", value);`<br>`}`<br><br>`#include <stdio.h>`<br>`void main()`<br>`{`<br>`int a = 5;`<br>`int b=10;`<br>`int value = ++a * (11 + 7) % 30 - 35 / 7+ b--;`<br>`printf("%d", value);`<br>`}` | [2.5+ 2.5] |
| 4 | (a) | Write a program in C to find the second highest number in an integer array. | [5] |
| | (b) | Write a program to pass an integer to a function named "PALL" and return 1 if it is a palindrome number, otherwise return 0. | [5] |
| | (c) | Write a program in C such that given an array of integers 'num', displays the indices of the two numbers such that they add up to the target. You may assume that each input will have exactly one solution, and you may not use the same element twice. You can display the output in any order.<br><br>Example:<br>Input: nums = [2,7,11,15], target = 9<br>Output: [0,1]<br>Explanation: Because nums[0] + nums[1] = 9, we display output as [0, 1]. | [5] |

***End***