| **Registration Number** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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**SRM Institute of Science and Technology** 

**College of Engineering and Technology**

**School of Computing**

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

**Academic Year: 2024-25 (ODD)**

**ANSWER KEY**



**Test: CT1 Date**: 30-09-2024

**Course Code & Title: 21CSS101J Programming for Problem Solving Duration:** 1hr 40 mins

**Year &Sem: I/I Max. Marks: 50**

**Course Articulation Matrix: *(to be placed)***

| **S.No** | **Course**  **Outcome** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **CO1** | **2** | **3** |  |  |  |  |  |  |  |  |  | **2** |
| **2** | **CO2** | **2** | **3** |  |  |  |  |  |  |  |  |  | **2** |
| **3** | **CO3** | **2** | **3** |  |  |  |  |  |  |  |  |  | **2** |
| **4** | **CO4** | **2** | **3** |  |  |  |  |  |  |  |  |  | **2** |
| **5** | **CO5** | **2** | **3** |  |  |  |  |  |  |  |  |  | **2** |

**Course Outcomes (CO):**

**CO-1:** Solve problems through computer programming. Express the basic data types and variables in C

**CO-2:** Use appropriate data types in simple data processing applications. To create programs using the concept of arrays.

**Part A (10\* 1 = 10 Marks)**

| **Sl.No** | **Question** | **Marks** | **BL** | **CO** | **PO** | **PI Code** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (d)scanf() | **1** | **1** | **1** | **1** | **1.3.1** |
| 2 | (b)False | **1** | **1** | **1** | **1** | **1.4.1** |
| 3 | (c)79.00 | **1** | **2** | **1** | **2** | **2.2.2** |
| 4 | (b)Relational operator | **1** | **2** | **1** | **2** | **2.2.2** |
| 5 | (b)14 | **1** | **2** | **1** | **2** | **2.4.2** |
| 6 | 1. for and B) while | **1** | **2** | **2** | **2** | **2.4.2** |
| 7 | d) 1 | **1** | **2** | **2** | **2** | **2.4.2** |
| 8 | b) Value of b is -3 | **1** | **2** | **1** | **2** | **2.1.2** |
| 9 | A) Hello in next line Boss. | **1** | **2** | **1** | **2** | **2.4.1** |
| 10 | A) 10 | **1** | **2** | **1** | **2** | **2.4.2** |

**Part B (4 \* 5 = 20 Marks)**

| **Sl.No** | **Question** | **Marks** | **BL** | **CO** | **PO** | **PI Code** |
| --- | --- | --- | --- | --- | --- | --- |
| 11 | Mention the importance of bitwise operators with an example   * **Bitwise operators definition (2)** * **Example (2)** | **5** | **2** | **1** | **1** | **1.4.1** |
| **12** | Device an algorithm that prompts the user to enter their weight (in kilograms) and height (in meters), then calculates and displays the BMI  **Algorithm**   * **Read user input for weight (in kilograms) and height (in meters) (1)** * **Calculation for BMI (2)** * **Display the output for BMI (1)** | **5** | **3** | **1** | **1** | **1.4.1** |
| **13** | Debug the following code to generate **“num is 3 digit Armstrong Number”**  #include <stdio.h>  int main() {  int num, originalNum, remainder, result = 0, n = 0;  // Input from user  printf("Enter an integer: ");  scanf("%d", &num);  originalNum = num;  // Correct loop condition to find the number of digits  while (**originalNum != 0**) {  reminder=originalNum%10;  result+=**reminder\*reminder\*reminder**;  }  // Output the result  if (result == num) {  printf("%d is 3 digit Armstrong number.\n", num);  } else {  printf("%d is not an Armstrong number.\n", num);  }  return 0;  } | **5** | **3** | **2** | **2** | **2.3.1** |
| **14** | **Fill the code given and explain how the desired output will be generated.**  #include <stdio.h>  int main() {  int number, largest = 0;  printf("Enter numbers (negative number to stop): \n");  while (**number>0**) {  scanf("%d", &number);  if **(number<0**) {  break;  }  if (number > largest) {  largest = number;  printf("Current number: %d, New largest: %d\n", **number**, **largest**);  }  }  printf("The largest number entered is: %d\n",**largest**);  return 0;  } | **5** | **3** | **2** | **2** | **2.4.2** |
| **15** | You are developing a simple user authentication system for an application. The system should allow users to enter their password repeatedly until they either enter the correct password or choose to quit the process. If the user chooses to quit, the program should terminate without granting access. Implement this using C   * **Initialize a password (1)** * **Using a loop, get the password to access from the user until the user enters the correct password, quit if the user enters quit as input. (2)** * **Display the desired output(1)** | **5** | **3** | **2** | **4** | **2.4.2** |

**Part C (2 \* 10 = 20 Marks)**

| **Sl.No** | **Question** | **Marks** | **BL** | **CO** | **PO** | **PI Code** |
| --- | --- | --- | --- | --- | --- | --- |
| **16** | Device an algorithm and implement a C program that reads an integer performance rating from the user. If the rating is above 75, increase the salary by 10%; if it's between 50 and 75, leave the salary unchanged; and if it's below 50, decrease the salary by 20%. Assume an initial salary of 1000, and do not use any conditional statements   * **Input performance rating (1)** * **Assign initial salary = 1000(1)** * **ternary operator usage to update the salary using performance rating to find the new salary (7)** * **Display the new salary(1)** | **10** | **3** | **1** | **4** | **4.1.2** |
| **(OR)** | | | | | | |
| **17** | Write a C program that reads an integer purchase amount from the user. Apply a 20% discount if the amount is greater than 100; no discount if it's between 50 and 100; and apply a flat discount of 10 if it's less than 50, all without using conditional statements.   * **Input the integer purchase amount (1)** * **Calculate the new salary using ternary operators with required conditions(8)** * **Display the new amount (1)** | **10** | **3** | **1** | **4** | **4.1.2** |
| **18** | Create a program that calculates the average score of a student based on a fixed number of test scores.   * **Input the no of test scores (1)** * **Using loop get the test scores(3)** * **Find the total (2)** * **Find the average of test scores (2)** * **Display the average test score (2)** | **10** | **3** | **2** | **4** | **4.1.2** |
| **(OR)** | | | | | | |
| **19** | Write a program that prompts the user to enter a secret code. The program should allow the user to keep trying until they enter the correct code. After three failed attempts, display a message indicating that the user has been locked out.   * **Initialize the password (1)** * **Using loop input password for access from user (4)** * **Check for input quit if it is the input terminate or else check for matching password with initialized password using for loop and if. (4)** * **Based on the result display the output (1)** | **10** | **3** | **2** | **4** | **4.1.2** |

**Course Outcome (CO) and Bloom’s level (BL) Coverage in Questions**