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| DEPARTMENT OF  **COMPUTER SCIENCE AND ENGINEERING** | | | |
| **Date** | 11-07-2023 | **Maximum Marks** | 50 |
| **Course Code** | 22CS23 | **Duration** | 90 Minutes |
| **Sem** | II Semester |  | |
| **PRINCIPLES OF PROGRAMMING USING C**  CIE-1 | | | |

**Instructions to students:**

1. Answer all questions
2. All questions carry equal marks

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| **Sl. No.** | | | **PART-B** | **M** | | **BT** | **CO** |
| **1** | **(a)** | | If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together?  **Ans:**  **Each day, John drinks 1/6th a barrel, or, for later convenience, 2/12ths**  **Each day Mary drinks 1/12th a barrel**  **So, the two together drink 3/12ths, or 1/4 barrel per day**  **¼ \* x =1 ; x=4**  **Thus, it will take 4 days to drink the whole thing.** | 04 | | L3 | CO2 |
| **(b)** | | Write an Algorithm and a Flowchart to Swap Two Numbers without using temporary variable.  **Ans:**  **Algorithm: 2.5m**   * **STEP 1: START** * **STEP 2: ENTER x, y** * **STEP 3: PRINT x, y** * **STEP 4: x = x + y** * **STEP 5: y= x - y** * **STEP 6: x =x - y** * **STEP 7: PRINT x, y**   **STEP 8: END**  **Flowchart: 2.5 m**  Flowchart for Swapping two numbers without using third variable | 06 | | L2 | CO1 |
| **2** | **(a)** | | Write a C Program using switch to Simulate the Calculator using Arithmetic operators (+, -, \*, /, %) declaring the appropriate type of variables required for the evaluation.  **Ans:**  **Declaration of the variables: 2m**  **Arithmetic operator logic : 4m** | 06 | | L3 | CO3 |
| **(b)** | | Discuss the process of compiling and running a C program with neat diagram.  **Ans:**  **Process: 2m**  **Diagram:2m** | 04 | | L1 | CO1 |
| **3** | **(a)** | | Write a C program to enter the temperature T and print the following message according to the given temperature by using the else if ladder statement.  T<=0           “It is very cold”  0<T<=15     “It is cold”  15<T<=30   “It is warm”  T>30         “It is hot”  **Ans: Declaration and reading of required data - 1 mark**  **Writing correct if statement - 4 marks** | 05 | | L3 | CO3 |
| **(b)** | | Write a C program to display the number in reverse order.  Ex: Input: Number is 1234, Output: Number in reverse order is 4321  **Ans:**  **#include <stdio.h>**  **void main(){**  **int num,r,sum=0,t;**  **printf("Input a number: ");**  **scanf("%d",&num);**  **for(t=num;num!=0;num=num/10){**  **r=num % 10;**  **sum=sum\*10+r;**  **}**  **printf("The number in reverse order is : %d \n",sum);**  **}** | 05 | | L3 | CO3 |
| **4** | **(a)** | | Explain the working of break and continue statements by writing a C program.  **Ans:**  **Explanation with proper example for break - 2 marks**  **Explanation with proper example for continue - 2 marks** | 04 | | L2 | CO2 |
| **(b)** | | Give the priority and associativity of the operators and also show the step-wise evaluation of the expression. a + 2 > b || !c && a == d || a – 2 <= e where a=11, b=6, c=0, d=7 and e =5  **Ans:**  **Priority : !, +, -, >, <=, ==, &&, || -2m Associativity -2m**  **Evaluation – 2m**  **Result = 1.** | 06 | | L2 | CO2 |
| **5** | **(a)** | Find the value of a >>3 and a<<3, when a=7.  **Ans: a>>3 = 112, a<<3 = 1.** | | 04 | L2 | | CO2 |
| **(b)** | Demonstrate diagrammatically and justify conversion of types in a mixed expression given below:  char c;  int j;  float f;  double d,r;  r = (c\*j)+(f/j)-(f+d);  **Ans:**    **Diagrammatic Representation -04 marks**  **Explanation of conversion of types – 02 marks.** | | 06 | L3 | | CO2 |

**COURSE OUTCOMES:**

**CO1:** Apply logical skills to solve the engineering problems using C programming constructs

**CO2:** Evaluate the appropriate method/data structure required in C programming to develop solutions by investigating the problem..

**CO3:** Design a sustainable solution using C programming with societal and environmental concern by engaging in lifelong learning for emerging technology.

**CO4:** Demonstrate programming skills to solve inter-disciplinary problems using modern tools effectively by exhibiting team work through oral presentation and written reports