

Course Name & Branch : B.Tech  
 Course Code and Course Name : BECE209E-Structured and Object Oriented Programming  
 Faculty Name(s) : Dr. Poongundran Selvaprabhu,  
 Class Number(s) : VL2025260102673  
 Date of Examination : 05-10-2025  
 Exam Duration : 90 minutes

Maximum Marks: 50

**General instruction(s):**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
  1. Implement branching and looping statements to handle 1D and 2D arrays.
  2. Realize the importance of pointers to manage the memory dynamically

| Q. No | Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | M  | CO | B<br>L |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|--------|
| 1.    | <p>Write a C program to <b>demonstrate different types of loops</b> in C, including <b>for</b>, <b>while</b>, and <b>do-while</b> loops. Your program should:</p> <ol style="list-style-type: none"> <li>1. Show the <b>syntax and working</b> of each loop with proper comments.</li> <li>2. Explain and demonstrate how an <b>infinite loop</b> can be declared using each type of loop.</li> <li>3. Demonstrate using <b>for</b> loop to perform the following tasks:               <ul style="list-style-type: none"> <li>• Repeatedly prompt the user to enter numbers until a <b>negative number</b> is entered.</li> <li>• Count and display the numbers <b>divisible by 2 and 3</b>, along with their <b>sum and average</b>.</li> <li>• Count and display the numbers <b>not divisible by 2 and 3</b>, along with their <b>sum and average</b>.</li> </ul> </li> </ol> | 10 | 3  | 2      |
| 2.    | <p>Define a <b>function</b> in C and explain the types. What are the advantages of using functions in a program?</p> <p>Explain the difference between <b>library functions</b> and <b>user-defined functions</b> with examples.</p> <p>Which method is preferred when you want to modify the actual values of variables in C? Explain the types in detail?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10 | 3  | 1      |



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|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|
| 3. | <p>Write a C program to perform the following tasks using <b>functions and call by reference</b>:</p> <ol style="list-style-type: none"><li>1. Initialize two integer variables in main by taking input from the user.</li><li>2. Create a function swap() that swaps the two numbers using <b>pointers (call by reference) without using a temporary variable</b>.</li><li>3. Print the values of the numbers <b>before and after swapping</b> in main.</li><li>4. Create additional functions to calculate and display:<ul style="list-style-type: none"><li>o Sum, Difference, Product of the two numbers</li></ul></li><li>5. Print the <b>sum, difference, and product before and after swapping</b>.</li></ol> | 15 | 4 | 3 |
| 4. | <p>Write a C program to take input of all elements of a <b>3×3 matrix</b> from the user and perform the following tasks:</p> <ol style="list-style-type: none"><li>1. Compute the sum of the <b>main diagonal</b> elements and check whether the sum is even or odd.</li><li>2. Compute the sum of the <b>secondary diagonal</b> elements and check whether the sum is even or odd.</li><li>3. Compare the <b>main diagonal sum</b> and the <b>secondary diagonal sum</b>, and print whether the main diagonal sum is <b>greater, smaller, or equal</b> to the secondary diagonal sum.</li></ol>                                                                                                                     | 10 | 4 | 4 |
| 5. | <p>Write a C program to accept a string input from the user (Ensure that the string length does not exceed 15 characters) and perform the following tasks:</p> <ul style="list-style-type: none"><li>• Count and display the total number of words in the string.</li><li>• Count and display the total number of alphabets (both uppercase and lowercase).</li><li>• Count and display the total number of digits.</li><li>• Count and display the total number of special characters (non-alphanumeric).</li></ul>                                                                                                                                                                                                 | 10 | 4 | 4 |