

University of Information Technology & Sciences (UITS)
Faculty of Science and Engineering
Department of Computer Science & Engineering
Program: B.Sc. in CSE
Term Final Examination, Autumn 2024
Course Title: Structured Programming Language
Course Code: CSE 0613111

Marks: 50

Time: 03(three) hours

(Answer all questions)

1. a) You have to build a system to manage records of all batsmen in the ODI World Cup. For each batsman, store the name, number of matches played, total runs scored, highest score, and batting average. Develop a structure for this purpose. [05]
 b) Briefly explain three string handling functions, namely `strlen()`, `strcmp()`, and `strcpy()`, and show their usage in a program. [05]
2. a) Using the keyboard, take an integer number n and calculate the sum of the first n natural numbers using recursion. [04]
 b) Consider the following portion of a program. Determine and explain how many times the loop's body will be executed. [02]
 $y=10;$
 do
 {
 $y=y+5;$
 }
 while($y<25$);
 c) Differentiate between break and continue. Write a program that demonstrates the use of both in a loop. [04]
3. a) Illustrate the categories of functions depending on arguments and return type with examples. [08]
 b) List four functions with description which use the math library function. [02]
4. a) Suppose $\text{Array1} = \{3, 6, 9, 12, 15\}$ and $\text{Array2} = \{2, 4, 6, 8, 10\}$ are taken as input. Develop a program that prints $\text{Array3} = \{1, 2, 3, 4, 5\}$, which is the element-wise difference between Array1 and Array2 . [05]
 b) Define a pointer variable and write the declaration procedure of a pointer variable. Demonstrate the use of pointers in swapping two variables. [05]
5. a) Write a C program using a user-defined function to check whether a number is palindrome or not. (Output must be shown using the main function). [05]
 b) Design the following pattern that takes $n=5$ as input. [05]
 A
 B B
 C C C
 D D D D
 E E E E E