



School of Computer Science and Engineering

Winter Semester 2022-2023

Continuous Assessment Test – 1

SLOT D1

Programme Name & Branch: B.Tech (CSE)

Course Name & code: Structured and Object-Oriented Programming  
BCSE102L

Class Number (s): VL2022230505539

Faculty Name (s): Jayachandran. J

Exam Duration: 90 Min.  
50

Maximum Marks:

Q.No.	Question	Max Marks
1.	<p>a) Compare the entry-controlled and exit-controlled loops with a neat example. (5)</p> <p>b) Write a C program that prompts the user to input number of calls and calculate the monthly telephone bills as per the following rule: Minimum Rs. 100 for up to 50 calls. Plus Rs. 1.75 per call for next 50 calls. Plus Rs. 1.50 per call for next 50 calls. Plus Rs. 1.00 per call for any call beyond 200 calls. (5)</p>	10
2.	<p>a) Justify the need for type conversion in C programming. With a neat example, discuss the different ways the type conversion can be performed. (5)</p> <p>(b) Develop a C program to perform the following string manipulation operations without using in-built functions. i) Calculate the length of String</p>	10

	ii) Compare two Strings. (5)													
3.	<p>A security firm has categorized their employees into three grades and an hourly rate is paid every day based on their grade. Details given below:</p> <table border="1"> <thead> <tr> <th>Grade</th><th>Hourly Rate(Rs.)</th><th>Overtime Pay (Per Hour)</th></tr> </thead> <tbody> <tr> <td>1</td><td>100.00</td><td>125.00</td></tr> <tr> <td>2</td><td>200.00</td><td>250.00</td></tr> <tr> <td>3</td><td>300.00</td><td>375.00</td></tr> </tbody> </table> <p>The firm has a policy for paying employees based on the number of hours they work in a day. The policy is as follows:  Less than 3 hours of work: no pay.  Between 3 and 6 hours of work: half pay (50% of the hourly rate).  More than 6 hours of work: full pay (100% of the hourly rate).  However, beyond 8 hours, the overtime pay is applicable for every additional hour.</p> <p>Implement a function 'salary()' to compute and return the salary of an employee based on the policy. The number of hours worked in a day and the grade of the employee should be passed as an arguments to the 'salary()'.</p> <p><b>Note:</b> The maximum number of hours an employee can work in a day is 12 hours.</p>	Grade	Hourly Rate(Rs.)	Overtime Pay (Per Hour)	1	100.00	125.00	2	200.00	250.00	3	300.00	375.00	10
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4.	Data structures will grow and shrink during the program execution. How the memory allocation and reallocation can be managed at runtime? Discuss with an example program.	10												
5.	<p>a) Illustrate the significance of pointers when you return multiple values from a function. Discuss with a suitable code. (7)</p> <p>b) Develop a C function to swap two numbers without using a temporary variable. The swapping operation should be performed in a user-defined function (through call-by-reference) using bitwise operators. (3)</p>	10												