

Reg. No.: 228R51225  
Name :



**VIT**

Vellore Institute of Technology

(Deemed to be University under Section 3 of UGC Act, 1956)

Continuous Assessment Test 1(CAT 1) – Mar 2023

Programme	B.Tech. CSE and its Specialization	Semester	Winter Semester 2022-23
Course Code	BCSE102L	Class Nbr(s)	CH2022232300561 CH2022232300562 CH2022232300563 CH2022232300564 CH2022232300733 CH2022232300734 CH2022232300784
Course Title	Structured and Object-Oriented Programming	Slot	C1
Faculty(s)	Dr. SUGANESHWARI Dr. DHANALAKSHMI R Dr. SUSEELA S Dr. KIRUTHIKA Dr. VATCHALA S Dr. DEEPA NIVETHIKA Dr. SENDHIL R		
Time	90 Minutes	Max. Marks	50

Answer all the Questions

Q. No.	Sub-division	Question Text	Marks
1.		NTA conducts JEE exams which comprise the Mains and the Advanced tests. Each of which carries 100 marks. Those who take 180 and above are eligible for the level 4 test. Those who secured below 180 are rejected for the level 4 test and will be allowed for the level 3 test. There are two levels of the test – level 3 and level 4. Write a C program to read the marks of n students scored in Mains and advanced and display whether the student is qualified for level-3 or level 4 test.	10
2.		An insurance company follows the following rules to calculate premiums.  1. if a person's health is excellent and the person is between 25 to 35 years old, lives in a city, and is a male, then the premium is Rs.4 per thousand, and his policy amount cannot exceed Rs. 2 lakhs.  Example: Rs 5000 for policy amount then Premium Amount is $5*4=20$ Rs then it's to be added to the policy amount.	10

	<p>2. if a person satisfies all the above conditions except that the gender is female, then the premium is Rs.3 per thousand, and her policy amount cannot exceed Rs.1 lakh.</p> <p>3. if a person's health is poor and he is between 25 to 35 years of age, he lives in a village and is a male, then the premium is Rs.6 per thousand, and his policy cannot exceed Rs.10,000.</p> <p>4. In all other cases, the person is not insured.</p> <p>Write a program to output whether the person should be insured, their premium rate, and the maximum amount they can be insured.</p>	
3.	<p>Imagine you are supposed to create a web page that allows users to input two equal-size arrays and click a button to merge them using a function. The function would take in the two arrays as parameters, merge them, and return the merged array. The merged array could then be displayed on the web page for the user to see. Keep the resultant in a new array. This resultant array is formed by copying the first array as it is, and reverse of the second array being copied after the first in the resultant. Perform sorting (descending order) operation for the resultant array and print it. Implement the same by-passing appropriate arrays to functions.</p>	10
4.	<p>The hacker hacked the bank server. One techie in the software team worked spontaneously and made the code that changed all the clients' passwords to save their money. Your task is to mimic his work for the smaller set of databases. You will be given n passwords, each with a variable length.</p> <p>Procedure to change the Password:</p> <p>If the length of the password is even, then.</p> <p>Compare the first character and last character of the string.</p> <p>If both are equal, then replace the last character with –</p> <p>First &lt; than the second, then replace the last character with +</p> <p>Else replace the last character with \$</p> <p>Finally, replace the odd place characters with *</p> <p>Else</p> <p>Identify the middle alphabet,</p> <p>if that is greater than the last one, then replace the previous character of the middle as the last alphabet and vice versa.</p> <p>if it is lesser, then replace the next character of the middle as the first alphabet and vice versa</p>	10

	If both are equal, then replace the even place characters with =							
5.	<p>Write a function to calculate the employee's gross pay for this month. An additional 5% HRA is given to the initial HRA (<math>x+5\%</math>).</p> <p>Initial HRA Calculation:</p> <table> <tr> <td>Gross pay</td> <td>HRA(x)</td> </tr> <tr> <td>&lt; 750</td> <td>3%</td> </tr> <tr> <td><math>\geq 1000</math></td> <td>4%</td> </tr> </table> <p>Your program will get the net pay of last month's salary from the employee, and it has to print the gross pay of the employee and the net pay after the HRA updation.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1. Write a function 'amount' that should return the gross pay when the net pay is passed as an argument to that function</li> <li>2. Write a function 'finale' that should print the revised net pay of the employee by getting the updated HRA via an argument, and the gross pay will be returned by the function 'amount' (i.e., function call for amount has to be inside the 'finale' function).</li> </ol> <p>Sample calculation: 1000 is the gross pay</p> <p>HRA Percentage and net pay calculation are given below</p> $1000 * 4/100 = 40$ $1000 + 40 = 1040$	Gross pay	HRA(x)	< 750	3%	$\geq 1000$	4%	10
Gross pay	HRA(x)							
< 750	3%							
$\geq 1000$	4%							

Total 50

