



SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Academic Year: 2022-2023

Program: B.Tech / MBA Tech

Stream: All Streams

Year: I Semester: I

Subject: Programming for Problem Solving

Time: 03 hrs (11 am to 2 pm)

Date: 16 Jun/2023.

No. of Pages: 04

Marks: 100

Special Re-Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

- 1) Question No. 1 is compulsory.
- 2) Out of remaining questions, attempt any 4 questions.
- 3) In all 5 questions to be attempted.
- 4) All questions carry equal marks.
- 5) Answer to each new question to be started on a fresh page.
- 6) Figures in brackets on the right hand side indicate full marks.
- 7) Assume Suitable data if necessary.

Q1		Answer briefly:	[20]
CO-1 SO-1 BL-5	a.	Write an algorithm and draw a flowchart to calculate and print the factorial of a given number.	[5]
CO-3 SO-1 BL-3	b.	What will be the output of the following code? Explain your output. <pre>int main() { char *ptr; char Str[] = "qwerty"; ptr = Str; ptr += 3; cout << ptr; return 0; }</pre>	[5]
CO-2 SO-6 BL-4	c.	What will be the output of the following code, when the user enters 'l' as input and 'x' as input. Explain your answer. <pre>#include <iostream> using namespace std; int main()</pre>	[5]

		<pre> { char ch; cout<<"Enter the choice"; cin>>ch; switch(ch) { case '1': cout<<"NMIMS"<<endl; case '2': cout<<"Hello"<<endl; break; case '3': cout<<"Hi"<<endl; break; case 'x': cout<<"Programming"<<endl; case 'y': cout<<"is"<<endl; default: cout<<"fun"<<endl; } } </pre>	
CO-4 SO-6 BL-5	d.	Describe the concept of class and objects with the syntax for class definition and object creation.	[5]
Q2 CO-3 SO-1 BL-3	a.	Write a suitable code that can differentiate between the concept of call by value and call by reference.	[10]
Q2 CO-2 SO-1 BL-4	b.	The total number of students in a class is 75, out of which 45 are boys. If 80% of the total students secured grade 'A' out of which 37 are boys, then write a program to calculate the total number of girls getting grade 'A'.	[10]
Q3 CO-3 SO-1 BL-4	a.	Write a Program to calculate the average marks of five subjects of N Students in a Class Using Array Of Structure.	[10]
Q3 CO-2 SO-1 BL-3	b.	Write a C++ program to swap the values of two variable with the help of '*' & '/' mathematical operator and without using a third variable.	[10]

Q4 CO-3 SO-1 BL-6	a.	Write a program to store a list of integer numbers in an array and give two choices to the user. 1. To find the maximum value from an array 2.. To find the average of values stored in an array.	[10]
Q4 CO-3 SO-1 BL-5	b.	Write a C++ program to find the sum of digits of a number using a recursive function.	[10]
Q5 CO-1 SO-1 BL-5	a.	<p>i. What will be the output of the following C++ code? 2.5 marks</p> <pre> #include <iostream> using namespace std; int main() { int a = 0; int b = 10; if (a && b) { cout << "true"<< endl ; } else { cout << "false"<< endl ; } return 0; } </pre> <p>ii. Create a class CricketPlayer with player number, name, and batting average as class data members. Define an input() function to assign values to data members and a display() function to display the player information. Create one object to store information about a player and invoke the input() and display() functions.</p>	[5+5]
Q5 CO-3 SO-1 BL-5	b.	Write a program to count the number of occurrences of a specific character in a string.	[10]
Q6 CO-3 SO-1 BL-5	a.	<p>Apply the given data. Basic Salary ≤ 10000 : HRA = 20%, DA = 80% Basic Salary ≤ 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA = 95%</p> <p>Dearness Allowance: Dearness Allowance is given out to employees to reduce the impact of inflation on employees. House Rent Allowance (HRA): For most employees, House Rent Allowance (HRA) is a part of their salary structure. Gross Salary: Gross Salary is the monthly or yearly salary before any deductions are made from it.</p> <p>Generate C++ program to input the basic salary of an employee and calculate its Gross salary by using the if-else statement</p>	[10]

Q6 CO-4 SO-1 BL-3	b.	Create a class 'Wall' having data members 'height' and 'length'. Class Wall, must contain a function which calculates Area of Wall. Now, create an object of the above class and try calling the function by respective object.	[10]
Q7 CO-4 SO-1 BL-5	a.	Create a class "furniture" having data members 'l' and 'w'. Derive the child class "table" having data member 'h' and define the member functions accept () and display () in class. Create the object of derived class and access the data members from base class and derived class.	[10]
Q7 CO-2 SO-1 BL-3	b.	<p>Rephrase the given C++ code using do-while.</p> <pre>// C++ Program to print numbers from 1 to 5 #include <iostream> using namespace std; int main() { int i = 1; // while loop from 1 to 5 while (i <= 5) { cout << i << " "; ++i; } return 0; }</pre> <p>Also compare C++ while and do-while loop with the help of flowchart.</p>	[10]