

**CHHATTISGARH SWAMI VIVEKANAND  
TECHNICAL UNIVERSITY**

**Department of Computer Science & Engineering**  
Class Test – I Session- APRIL-MAY, 2024 Month-April  
Sem- CSE 2<sup>ND</sup> (AI)/DS) Subject- Code-A000271(014)  
Subject Name – Engineering Mathematics - II

Time Allowed: 2 hrs

Max Marks: 40

Note: -

CO1: Question (1) of unit I and II is compulsory.

CO2: Attempt any two question of Question (2), (3) and (4) of unit I and II.

Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	COs
<b>Unit I</b>				
Q1	Sketch the region of the integration and evaluate the area of the following : $-2 \leq y \leq 2; y^2 \leq x \leq 4.$	[4]	Apply	CO1
Q2	Change the order of integration in $I = \int_0^1 \int_{x^2}^{2-x} dx dy$ and hence evaluate.	[8]	Apply	CO1
Q3	Evaluate the triple integral of the function $f(x, y, z) = x^2$ over the region V inclosed by the plane $x = 0, y = 0, z = 0$ and $x + y + z = a.$	[8]	Analyze	CO1
Q4	By changing to polar co-ordinate in $I = \int_0^2 \int_0^{\sqrt{2x-x^2}} \frac{x}{\sqrt{x^2+y^2}} dx dy$ and hence evaluate.	[8]	Apply	CO1

**Unit II**

Q1	Find the differential equation of the following family of (a) the curve $y = e^{mx}$ , where m is an arbitrary constants. (b) all straight lines passing through origin. (c) all straight lines in the xy plane.	[4]	Apply	CO1
Q2	(a) Solve $(D^2 + 4)y = x \cos x.$ (b) Solve $(x^2 + y^2 + 1)dx - 2xydy = 0.$	[8]	Understand	CO2
Q3	Solve $(D^2 + 2)y = x^2 e^{3x} + e^x \cos 2x.$	[8]	Apply	CO2
Q4	Solve $\frac{dy}{dx} = e^{x-y}(e^x - e^y).$	[8]	Understand	CO2



**Chhattisgarh Swami Vivekanand Technical University**  
University Teaching Department  
**Class Test-1 (Jan-June 2024)**  
**B. Tech (H)-2<sup>nd</sup> Semester**  
**Branch: Artificial Intelligence/ Data Science**

**Subject Name: Data Structure Using C**

**Max Marks: 40**

**Note: All questions are compulsory**

**Min Marks:14**

**Subject Code: A000272(022)**

**Times: 2 hrs**

**CO1:** Analyze data objects, data structures and related concepts.

**CO2:** Implement problems using different data structures

**CO6:** To appreciate the impact of analytics and big data on the information industry and the external ecosystem for analytical and data services.

Q. No.	Questions	Marks	BL	CO
UNIT 1				
1	a Illustrate the basic criteria and distinct area of an algorithm	8	L4	1
UNIT 2				
2	a Consider the Linear arrays AI (5:50), DS (-5:10) and CSE (18), Consider index started from 1  (i) Find the number of elements in each array  (ii) Suppose Base (AI) =300 and w=4 words per memory cell for AI. Find the address of AI [15], AI [35] AND AI [55]  (iii) Given an array arr [1.....10] [1.....15] with a base value of 100 and the size of each element is 1 Byte in memory find the address of arr [8][6] with the help of column-major order.	8	L4	2
	b Write a C program to perform binary search program	8	L3	2
	c Write the merge sort algorithm and apply it to arrange the given elements in the ascending order.	8	L3	2
UNIT 6				
3	a Write Insertion sorting algorithm and calculate its best case and worst case time complexity	8	L3	6



**Chhattisgarh Swami Vivekanand Technical University**  
**University Teaching Department**  
**Class Test-1**  
**B. Tech (Hons.)-2nd Semester**  
**Branch: AI/DS**

**Subject Name:** Object Oriented Programming

**Subject Code:** A000273(022)

**Max Marks:** 40

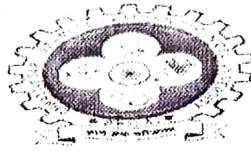
**Min Marks:** 14

**Times:** 2 hrs

**Note:** Part A is compulsory, attempt any two questions from B, C, and D.

Q. No.	Question s	Marks
1	a ✓ Differentiate between object-oriented programming and procedural oriented programming.	6
	b Explain in detail about data types available in C++ with example.	7
	c ✓ Explain in detail what is cin , cout, endl in C++ with a program.	7
	d ✓ Explain in detail about access modifiers available in C++. Write example of each	7
2	a ✓ Write a program to add two complex numbers using object as function arguments.	6
	b Write a program to define member function: a) inside the class b) outside the class	7
	✓ What do understand by function overloading and constructor overloading.	7
	d ✓ What do you understand by class and object , constructor in C++. Explain each with an example.	7





# Chhattisgarh Swami Vivekanand Technical University, Bhilai

University Teaching Department

Class Test-1

B. Tech (H)-2<sup>nd</sup> Semester

Branch: AI/DS

Subject Name: Digital Logic Design

Subject Code: A000274 (028)

Max Marks: 40

Times: 2 hrs

Note: Part A is compulsory, attempt any two questions from B, C, and D.

Q. No.	Questions	Marks
UNIT 1		
1	A ✓ In the context of Boolean algebra, describe DeMorgan's Theorem, Commutative law, Distributive Laws and Associative Boolean law.	4
	B / Simply the following expressions: $Y_1 = A + \overline{A}B + \overline{A}\overline{B}C + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}\overline{C}\overline{D}E$ $Y_2 = \overline{A}(A + B) + (B + AA)(A + \overline{B})$	8
	C Develop a combinational circuit that converts Binary Coded Decimal (BCD) inputs into both Excess 3 code and Gray code.	8
	D ✓ Simplify the expression $F(W,X,Y,Z) = \sum m(0,1,2,4,5,6,8,9,12,13,14)$ using K-Map method.	8
UNIT 2		
2	A ✓ Write short note on Encoder and Decoder.	4
	B / What is the function of a multiplexer, and how does it operate. Implement $F(A,B,C) = \sum m(1,3,5,6)$ using 4:1 multiplexer.	8
	C ✓ Outline the design of both a half adder and a full adder, and explain their functionalities and also draw the Truth Table and logic block.	8
	D Explain the concept of PLDs and FPGA.	8



**CHHATTISGARH SWAMI VIVEKANAND  
TECHNICAL UNIVERSITY**  
**Department of Computer Science & Engineering**  
Class Test – I Session- JAN– JUN, Month-April  
**Sem- CSE 2<sup>nd</sup> (DS/AI)**

**Subject Name – Python for Data Science**

**Subject-Code- A000275 (022)**

Max. Marks:40

Min. Marks:14

Time Allowed:2 hrs

**Note:-Part A is compulsory, attempt any two questions from B, C and D.**

**CO1:** Translate fundamental programming concepts such as data types, loops, conditionals into Python code.

**CO2:** Know when and how to implements User define modules, Exception Handling, file operation OOPS Concepts (e.g., into functions, or classes) to make it more modular and robust.

**CO3:** Use NumPy perform common data wrangling and computational tasks in Python.

**CO4:** Use Pandas to create and manipulate data structures like Series and DataFrames.

**CO5:** Wrangle different types of data in Pandas including numeric data, strings, and datetimes.

**CO6:** To understand the data preprocessing and data visualization using Python libraries.

	Questions	Marks	Levels of Bloom's Taxonomy	COs
<b>Unit I</b>				
Q1	Write python program to perform following operations on Set i) Create set ii) Access set Element iii) Update set iv) Delete set	[4]	Understand	CO1
Q2	Write a program to display the fibonacci sequences up to nth term where n is provided by the user and also write a python program using <b>nested for loop</b> to print the following pattern? 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5	[8]	Apply	CO1
Q3	Compare List and Dictionary. Explain the following list methods with an example. a) append() b) extend() c) insert() d) index() e) sort()	[8]	Analyzing	CO1
Q4	Describe the different types of function arguments with suitable examples and write the syntax for the following built-in functions with an example. a) abs() b) max() c) sqrt() d) pow() e) len()	[8]	Understand	CO2
<b>Unit II</b>				
Q1	Write the syntax for import and to import all objects from a module with suitable example?	[4]	Create	CO2
Q2	Discuss the following methods associated with the file object a) read() b) readline() c) readlines() d) tell() e) seek() f) write() .	[8]	Analyzing	CO2

Q3	List some few common Exception types and explain when they occur. Explain how try-catch block is used for exception handling in python	[8]	Analyzing CO2
Q4	Explain the Data Hiding and Data Abstraction. Discuss any two types of inheritance in Python programming with suitable examples.	[8]	Understand CO2