CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

Department of Computer Science & Engineering

Class Test – I Session- APRIL-MAY, 2024 Month-April

Sem- CSE 2ND (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.
C02: 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
	Unit I			
Q1	Sketch the region of the integration and evaluate the area of the following : $-2 \le y \le 2;\ y^2 \le x \le 4.$	[4]	Apply	CO1
Q2	Change the order of integration in $I = \int_0^1 \int_{x^2}^{2-x} dxdy$ 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 $I = \int_0^2 \int_0^{\sqrt{2x-x^2}} \frac{x}{\sqrt{x^2+y^2}} dxdy$ 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 $(D^2 + 4)y = xcosx.$ (b) Solve $(x^2 + y^2 + 1)dx - 2xydy = 0.$	[8]	Understand	CO2
Q3	Solve $(D^2 + 2)y = x^2e^{3x} + e^x cos2x.$	[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)-2nd Semester
Branch: Artificial Intelligence/ Data Science

Subject Name: Data Structure Using C **Subject Code: A000272(022)**
Max Marks: 40 **Min Marks:14** **Times: 2 hrs**
Note: All questions are compulsory

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.)-2ndSemester
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.		Questions	Marks
1	a	Differentiate between object-oriented programming and procedural orientedprogramming.	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
	c	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 anexample.	7

Chhattisgarh Swami Vivekanand Technical University, Bhilai

University Teaching Department

Class Test-1

B. Tech (H)-2nd 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 2nd (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
	Unit I			
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 **nested for loop** 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
	Unit II			
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