Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science & Engineering

Class Test – I Session - July – Dec. 2023 Month - November

Sem- 3rd CSE and AIML Subject- Mathematics III Code- B000311(014)/B109311(014)

Time Allowed: 2 hrs Max Marks: 40

Note: - ***All questions are compulsory.***

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Calculate (i) $L\left(\frac{1-\cos t}{t^2}\right)$ (ii) $I=\int_0^\infty t^2 e^{-2t}.\sin t\, dt$	[4+4]	Apply	CO1
2.	Solve $ty''+2y'+ty=\cos t,\ y(0)=1$ OR $\frac{d^2x}{dt^2}+9x=\cos 2t,$ *when* $x(0)=1, x(\pi/2)=-1.$	[8]	Apply	CO1
3.	Apply convolution theorem to prove that $L^{-1}\left\{\frac{8}{(s^2+1)^3}\right\}=(3-t^2)\sin t-3t\cos t$	[8]	Apply	CO1
4.	Solve (i) $z=y^2+2f\left(\frac{1}{x}+\log y\right)$ (ii) $px(z-2y^2)+qy(z-y^2-2x^3)=z(z-y^2-2x^3)$	[2+6]	Apply	CO2
5.	Solve $r+s-6t=y\cos x$ OR $(D^2-DD'-2D'^2)z=(y-1)e^x$	[8]	Apply	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science and Engineering (AI)& AIML
Class Test – I, Session- July-December 2023
Sem- B.Tech.3rdSem (AI and AIML Branch)
Subject- Data structure and Algorithms

Time Allowed:2hrs. **Max Marks: 40**

Note: Attempt any five. Each question carries equal marks.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Define Data structure. What is abstract data type in data structure? Describe different types of asymptotic notations.	1+2 5	Understand	CO2
Q2	What is Row major and Column major ordering of array? Given an array, **a[1.....10][1.....15]** with base value **100** and the size of each element is **1 Byte** in memory. Calculate the address of **a[8][6]** using (a) Row-major order. (b) Column major order	4 2+2	Apply	CO3
Q3	What is linked list? Write the limitation of singly linked list. OR What is stack overflow condition in stack? Write code for it. Write a code to (a)Implement singly linked list (b) get the length of singly linked list	2 2 4 2	Apply	CO3
Q4	Assume asingly linked list containing five nodes. Write a code to illustrate (a) Insertion of node at end of list (b) Insertion of a node before 3rd node. OR How polynomial $2x^3+4x^2+3x+5$ will be represented using linked list?	4+4 8	Apply	CO3
Q5	Assume a Doubly linked list containing four nodes. Write a code for (a) Insertion of node at end of list (b) Deletion of node at 2nd position. OR Write a code for push and pop operation on an stack using Array implementation.	4+4 4+4	Apply	CO3
Q6	What is sparse matrix? List out its disadvantages. Describe the methods for representation of sparse matrix with suitable example. OR Write a code for push and pop operation on an stack using Linked list implementation.	2 6 6	Understand	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July– Dec, 2023 Month- November
Sem- AIML- 3rd Subject- Digital Electronics & Logic Design–B109315(022)
Time Allowed: 2 hrsMax Marks: 40

Note: - ***Attempt any 5 question.*** *All questions carry equal marks.....****Attempt atleast2 questions from each CO***

Q.NO.	Questions	Marks	Levels of Bloom's taxonomy	Cos
1	a. State and Prove DeMorgansTheorum b. Write a Short note on i) BCD Code ii) ASCII Code	[8]	Remembering	CO1
2	Find the Hamming code for binary code, $d_4d_3d_2d_1$ = 1000. Consider even parity bits. Find the error position when the code received is $b_7b_6b_5b_4b_3b_2b_1$=1001111.	[8]	Applying	CO1
3	Why NAND and NOR Gates are considered to be Universal gates	[8]	Understanding	CO1
4	Minimize the following boolean function-F(A, B, C, D) = Σm(0, 1, 2, 5, 7, 8, 9, 10, 13, 15). Implement the simplified expression using NAND gates only	[8]	Applying	CO1
5	Simplify the following Boolean function, f(W,X,Y,Z)=∑m(2,6,8,9,10,11,14,15) using Quine-McClukey tabular method.	[8]	Applying	CO1
6	Explain Half adder and Full Adder. How will you implement a Full adder using a half adder	[8]	Understanding	CO2
7	Explain the working of a BCD Adder	[8]	Applying	CO2
8	Construct a 4 bit Gray to Binay Converter.	[8]	Applying	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science and Engineering (AI) & AIML
Class Test – I, Session- July-December 2023
Sem- B.Tech3rdSem (AIML Branch)
Subject- Operating System

Time Allowed: 2hrs. **Max Marks: 40**

Note: Attempt any five. Each question carries equal marks.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	What is Operating System? What are the components of computer system? Describe the use of Command Interpreter and give names of any two Command Interpreter. What is Context Switching?	4 2 2	Understand	CO1
Q2	Explain each and every function of an Operating System?	8	Apply	CO1
Q3	What is the use of Process Control Block? Also explain its components.	8	Apply	CO2
Q4	Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 10,6,2,4 & 8 minutes. Their priorities are 3,5,2,1 & 4 respectively with 5 being the highest priority. Determine Turn Around Time for the following- (i) Round Robin (Time Quantum = 2 minutes) (ii) Priority Scheduling (iii) First-Come-First-Serve (run in order 10,6,2,4,8) (iv) Shortest Job First	8	Evaluate	CO2
Q5	Explain 7-State Transition Diagram of Process.	8	Remember	CO2
Q6	Difference between Multiprogramming Operating System and Multitasking Operating System.	8	Understand	CO1

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science and Engineering (AI) & AIML
Class Test – I , Session- July-December 2023
Sem- B.Tech3rdSem (AI &AIML Branch)
Subject- Introduction to Python

Time Allowed: 2hrs. **Max Marks: 40**

Note: Solve any five questionsout of six.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
Q1	Explain operators in Python with example. Write Python code for membership and Identify operators.	08	Understanding	CO1
Q2	What is identifiers in Python explain in details? Explain different data types in Python.	08	Understanding	CO1
Q3	Write a Python code to check a number is EVEN number or ODD number with conditional statement.	08	Applying	CO1
Q4	Write a Python code to check a number is positive, negative or zero using conditional statement.	08	Applying	CO1
Q5	What are the various features of NumPy? List the steps with Python code to create a 1D array & 2D array.	08	Applying	CO2
Q6	What is the procedure to find the indices of an array on NumPy where some condition is true? List the advantages of NumPy Array have over (nested) Python lists?	08	Applying	CO2

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Department of Computer Science and Engineering (AI) & AIML
Class Test – I , Session- July-December 2023
Sem- B.Tech3rdSem (AI &AIML Branch)
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Time Allowed: 2 hrs. **Max Marks: 40**

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