

**ShriShankaracharyaInstituteofProfessionalManagement&TechnologyDepartment**

**of Computer Science & Engineering (AI)**

Class Test–ISession: JUL- DEC2023Month-NOV 2023

**B. Tech. Computer Science & Engineering (AI)**

**Semester:3<sup>rd</sup> Section: -**

**Subject:Mathematics IIICode:B109311(14)**

**TimeAllowed:2Hours**

**MaxMarks:40**

**Note: -AllQuestionsCompulsory.**

Q.N.	Question	Marks	Levels of Blooms Taxonomy	COs
Q1	(a) Estimate the production for 1964 and 1966 from the following table: Year:      1961   1962   1963   1964   1965   1966   1967 Production: 200   220   260   ----   350   ----   430 (b) Prove that $\frac{2+\Delta}{2\sqrt{1+\Delta}} = \sqrt{1+\frac{\delta^2}{4}}$	[4+4]	Remember & Apply	CO5
Q2	(a) Construct a polynomial for the data given below and also find $f(5)$ . x: 4   6   8   10 y: 1   3   8   16 (Calculate for 2 places of decimal) (b) From the following table find $f(x)$ applying Newton's divide difference formula. x: 1   2   7   8 y: 1   5   5   4	[4+4]	Remember & Apply	CO5
Q3	From the following table by applying suitable central interpolation formula estimate the value of $\tan 16^\circ$ (Calculate for 4 places of decimal) x° : 0   5   10   15   20   25   30 y=tanx : 0   0.0875   0.1763   0.2667   0.3640   0.4663   0.5774	[8]	Remember & Apply	CO5
Q4	Find Laplace transform of (a) $\sin^3 t$ (b) $\cos(at + b)$	[4+4]	Remember & Apply	CO3
Q5	(a) Find Laplace transform of $t \cdot \int_0^t \frac{e^{-t} \cdot \sin t}{t} dt$ (b) Evaluate $\int_0^\infty t \cdot e^{-2t} \cdot \sin 3t dt$ .	[4+4]	Remember & Apply	CO3



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.3<sup>rd</sup>Sem (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?	1+2	Understand	CO2
	Describe different types of asymptotic notations.	5		
Q2	What is Row major and Column major ordering of array?	4	Apply	CO3
	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	2+2		
Q3	What is linked list? Write the limitation of singly linked list.	2	Apply	CO3
	OR			
	What is stack overflow condition in stack? Write code for it.	2		
	Write a code to (a)Implement singly linked list	4		
	(b) get the length of singly linked list	2		
Q4	Assume asingly linked list containing five nodes. Write a code to illustrate	4+4	Apply	CO3
	(a) Insertion of node at end of list (b) Insertion of a node before 3 <sup>rd</sup> node.			
	OR			
	How polynomial $2x^3+4x^2+3x+5$ will be represented using linked list?	8		
Q5	Assume a Doubly linked list containing four nodes. Write a code for	4+4	Apply	CO3
	(a) Insertion of node at end of list (b) Deletion of node at 2 <sup>nd</sup> position.			
	OR			
	Write a code for push and pop operation on an stack using Array implementation.	4+4		
Q6	What is sparse matrix? List out its disadvantages.	2	Understand	CO2
	Describe the methods for representation of sparse matrix with suitable example.	6		
	OR			
	Write a code for push and pop operation on an stack using Linked list implementation.	6		



**Shri Shankaracharya Institute of Professional Management & Technology**  
**Department of Electronics and Telecommunication Engineering**  
 Class Test – I Session- July-Dec, 2023 Month- November  
 Sem- ETC+IT+CSE(AI) 3<sup>rd</sup> Subject- Digital System Design- B000313(028)  
 Time Allowed: 2 hrs Max Marks: 40

Note: - Q.1 is compulsory and attend any 4 from 2,3,4,5,6.

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	a) Find Gray Code equivalent of Hexadecimal number $(A2C)_{16}$ . b) Find 5421 BCD equivalent of 83. c) Add 9384 and 4888 in BCD code. d) Convert $(6AE2)_{16} = (?)_{10} = (?)_2$ ?	[8]	Understanding	CO1
2.	Reduce the following Expression to the simplest possible POS and SOP Forms. $F_2 = \sum m(1, 5, 6, 12, 13, 14) + d(2, 4)$	[8]	Apply	CO1
3.	a) A signal error correcting code for a 11-bit group 01101110101? b) Test the following hamming code sequence for 11-bit message and correct it if necessary (101001011101011)?	[8]	Apply	CO1
4.	Obtain the minimal expression using Quine – Mc Cluskey method. $f(A, B, C, D) = \sum m(1, 5, 6, 12, 13, 14) + d(2, 4)$	[8]	Apply	CO1
5.	Design B C D Adder by using IC's 7483. Or Design Full adder by using 3:8 decoder.	[8]	Design	CO2
6.	(a) Implement a full Subtractor using 8 :1 multiplexer. (b) Design 1:16 Demultiplexer by using 1:4 & 1:2 De multiplexer.	[8]	Design	CO2



# Shri Shankaracharya Institute of Professional Management & Technology

## Department of Computer Science and Engineering (AI)

Class Test – I, Session- July-December 2023

Sem- B.Tech 3<sup>rd</sup> Sem (CSE (AI))

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 an Operating System? What are the main function of Operating System?	8	Understand	CO1																		
Q2	Explain the various Operating System services with diagram.	8	Apply	CO1																		
Q3	Explain System call, Batch Operating System and Real Time Operating System.	8	Understand	CO1																		
Q4	a) What is Process? b) Explain these terms with figure i) Process Control Block (PCB) ii) Process State diagram	8	Understand	CO2																		
Q5	What is Semaphore? Describe Dining Philosopher Problem with its possible solution.	8	Remember	CO2																		
Q6	Consider the following set of processes, where the length of the CPU burst time is given in millisecond. <table border="1" data-bbox="235 1131 1096 1355"><thead><tr><th>Process</th><th>Burst time</th><th>Priority</th></tr></thead><tbody><tr><td>P1</td><td>10</td><td>3</td></tr><tr><td>P2</td><td>1</td><td>1</td></tr><tr><td>P3</td><td>2</td><td>3</td></tr><tr><td>P4</td><td>1</td><td>4</td></tr><tr><td>P5</td><td>5</td><td>2</td></tr></tbody></table> <p>The processes are assumed to have arrived in an order P1, P2, P3, P4, and P5 of all-time 0.</p> <p>i) Draw four Gantt chart. Illustrate the execution of this process using FCFS, SIF, non-preemptive priority and RR (time quantum = 1) Scheduling</p> <p>ii) What is the turnaround time of each process for each of the Scheduling algorithm in part – (i).</p> <p>iii) What is the waiting time of each process for each of the Scheduling algorithm in part – (ii)</p> <p>iv) Which of the Scheduler in part (i) results in minimal average waiting time overall process.</p>	Process	Burst time	Priority	P1	10	3	P2	1	1	P3	2	3	P4	1	4	P5	5	2	8	Evaluate	CO2
Process	Burst time	Priority																				
P1	10	3																				
P2	1	1																				
P3	2	3																				
P4	1	4																				
P5	5	2																				





**Shri Shankaracharya Institute of Professional Management & Technology**

**Department of Computer Science and Engineering (AI) & AIML**

Class Test – I, Session- July-December 2023

Sem- B.Tech3<sup>rd</sup>Sem (AI &AIML Branch)

Subject- Introduction to Python

Time Allowed: 2 hrs.

Max Marks: 40

Note: Solve any five questions out 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