Shri Shankaracharya Institute of Professional Management & Technology
Department of Artificial Intelligence

Class Test – I   Session- July – Dec 2022 Month – December

Sem- B. Tech. 3rd Semester, **Subject-** Introduction to Python

Time Allowed: 2 hrs.   Max Marks: 40

Note: - Attempt any five questions out of six. All question will   carry equal marks.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	Analyze the concept of while loop with suitable example. Write a Python program to display factorial of a number using while loop.	[8]	Understand	CO1
2.	Illustrate the for loop with example and write a Python code to create a list with name fruits containing elements as 'apple', 'banana', 'orange', 'guava'. Use **FOR** loop which will print all the elements of list except 'orange'.	[8]	Understanding	CO1
3.	Elaborate Lambda Function with example. Write a Python program to count even and odd numbers in a given arrays of integers using lambda function. Array = [2, 3, 6, 8, 9, 5, 7, 11, 10, 4, 12]	[8]	Understanding	CO1
4.	Generate a Python code to create a function studentmrk() that accept five subjects marks from the users and calculate average and percentage of marks.	[8]	Applying	CO1
5.	Generate a 1-D array using NumPy and write a Python code to test whether none of the elements of a given array is zero.	[8]	Applying	CO2
6.	Illustrate array Broadcasting and array Vectorization with example.	[8]	Understand	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science and Engineering (AI)
Class Test – I, Session- July-dec 2022, Date-22/12/2022
Sem- B.Tech.3rd Sem
Subject- Operating System

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

Note: Solve any two questions from each part.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Unit-I			

Q1	1. Define Operating Systems and discuss its role from different perspectives.
	2. Explain fundamental difference between
	  i) N/w OS and distributed OS
	  ii) web based and embedded computing.
	3. What are multiprocessor systems? Give advantages.
		[2+2+2]	Understanding	CO1

Q2	1. List out different services of Operating Systems and explain each service. 2. What is operating system? What are functions of operating system? 3. What do you mean by system component?	[8+8+8]	Understanding	CO1
	Unit-II			
Q3	1. What do you mean by PCB? Where is it used? What are its contents? Explain. 2. What is booting? 3. What is a process? Draw and explain process state diagram.	[2+2+2]	Applying	CO2
Q4	1. What is an operating system? State and explain the basic functions of operating system? 2. Assume the following workload in a system:	[8+8+8]	Applying	CO2

2. Assume the following workload in a system:

Process	Arrival Time	Burst Time
P1	5	5
P2	4	6
P3	3	7
P4	1	9
P5	2	2

Draw a Gantt chart illustrating the execution of these jobs using round robin scheduling algorithm and also Calculate the average waiting time and average turnaround time.

3. Consider the following processes

Process	Arrival Time	Burst Time	Priority
P1	10	3	3
P2	1	1	1
P3	2	3	3
P4	1	4	4
P5	5	2	2

The processes arrived in order P1 to P5 all at 0

i) Draw Gantt chart to show the execution using FCFS, SJF, non-preemptive priority (smaller priority implies higher priority).

ii) Calculate average TAT and WT.

Shri Shankaracharya Institute of Professional Management & Technology

Department of Computer Science & Engineering

Class Test – I   Session – July – Dec 2022 Month - December

Semester – CSE (AI), ET & IT III   Subject – Mathematics III Code – B000311(014)

Time Allowed: 2 Hours   Maximum Marks: 40

Note: Solve Any 5 Questions

Q. N.	Questions	Marks	Level of Bloom's Taxonomy	COs
1.	The population of a town is as follows: Year : 1941 1951 1961 1971 1981 1991 Population: 20 24 29 36 46 51 Estimate the population increase during the period 1946 to 1986. Do all the calculation for 2 decimal places.	[8]	Applying	CO5
2.	Find Cos31 by Stirling's & Cos35 by Bessel's formula. x : 10 20 30 40 50 Cos$x$: 0.9848 0.9397 0.8660 0.7660 0.6428	[8]	Applying	CO5
3.	(i) Apply Lagrange's interpolation formula to find interpolating polynomial $f(x)$ satisfying the following data. (ii) Compute $f(2)$, by applying Newton's Divide difference formula. x : 0 1 3 4 $f(x)$: -12 0 6 12	[4+4]	Applying	CO5
4.	(i) The probability density function of a continuous random variable $f(x) = \begin{cases} \dfrac{k}{x^3}, & 5 \le x \le 10 \\ 0, & Otherwise \end{cases}$ Find value of k. (ii) Find the standard deviation for the following discrete probability distribution: x: 8 12 16 20 24 $p(x)$: 1/8 1/6 3/8 1/4 1/12 Do all the calculation for 2 decimal places.	[4+4]	Applying	CO4
5.	The frequency of the accidents per shift in a factory is as shown below: Accidents per shift : 0 1 2 3 4 Frequency : 180 92 24 3 1 Calculate mean number of accidents and fit Poisson's distribution. Do Calculations for 2 places of decimals.	[8]	Applying	CO4
6.	Articles are classified in three categories, 60% are less than 50, 35% are in the range 50-60, and only 5% are greater than 60. If this classification follows normal distribution, then find mean and standard deviation.	[8]	Applying	CO4

Shri Shankaracharya Institute of Professional Management & Technology
Department of CSE (AI)

Class Test – I Session- Jul – Dec 2022 Month-Dec

Sem- 3rd Sem [CSE(AI)] | Subject- Data Structure | Code-

Time Allowed: 2 hrs | Max Marks: 40

Note: - All Questions are compulsory.

Q. N.	Questions	Marks	Levels of Bloom's taxonomy	COs
	Section - I			
1.	An array X [-15……….10, 15…………..40] requires one byte of storage. I the f beginning location is 1000, determine the location of X [0, 20] Row Major Wise and Column Major Wise.	[4]	Understand	CO1
2.	What is a linear Linked List? c. Write an algorithm to delete middle a node from a singly linked list. d. Write an algorithm to insert a node at the first location in a singly linked list.	[6]	Apply	CO1
3.	Describe Sparse Matrix. Design an algorithm for the Sparse Matrix using an array.	[4]	Apply	CO1
4.	Write an algorithm to add two polynomial equations: ➢ 1st Equation: $5x^4 + 6x^3 + 2x - 5$ ➢ 2nd Equation: $x^4 - 2x^3 + 3x^2 + 2$ and show diagrammatically how these two polynomials can be represented in an array.	[6]	Apply	CO1
	Section - II			
5.	What is Stack? Write its application and also convert the following infix expression into Postfix Expression using Stack. $X = a * (b + c) / ((d - e) + f)$	[4]	Apply	CO2
6.	Describe the working principle of Recursion. Write a recursive function **Fact (n)** to find the factorial of an integer. Diagrammatically explain, how stacking and unstacking takes place during the execution of **Fact(5)**.	[6]	Apply	CO2

7.	What would be the output of the following function:
	 void main ( ) { int X;
	  X= Do(5); printf("X=%d",X); }
	 int Do(int N) {
	 if(N <3)
	  return 1;
	 else
	  return(Do(N-1) + Do(N-3)+1); }
		[6]	Apply	CO2

8.	Evaluate the following Postfix Expression using Stack: 8, 2, 3, ^, /, 2, 3, *, +, 5, 1, *, +	[4]	Evaluate	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – I Session- July-Dec, 2022 Month- December
Sem- ET&T+IT+CSE(AI) 3rd Subject- Digital System Design- B000313(028)
Time Allowed: 2 hrs   Max Marks: 40

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Note: -   Q.1is 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 647 and 482 in 8421 BCD code. d) Using 9's complement, subtract 72532-3250.	[8]	Understanding	CO1
2.	Reduce the following Expression to the simplest possible POS and SOP Forms. $F_2 = \Sigma m\ (1, 5, 6, 12, 13, 14) + d\ (2, 4)$	[8]	Apply	CO1
3.	a) Device a signal error correcting code for a 11-bit group 01101110101? b)Test the following hamming code sequence for 11- bit massage and correct it if necessary (1010010111101011)?	[8]	Apply	CO1
4.	Obtain the minimal expression using Quine – Mc Cluskey method. $f(A, B, C, D) = \Sigma m\ (1, 5, 6, 12, 13, 14) + d\ (2, 4)$	[8]	Apply	CO1
5.	Design B C D Adder by using IC's 7483. Or Explane Look ahead carry generator.	[8]	Design	CO2
6.	(a) Implement a full adder using 8 :1 multiplexer. (b) Design 16:1 multiplexer by using 4:1 multiplexer.	[8]	Design	CO2