Register Number:……..

KUMARAGURU
college of technology
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B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Second Semester

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

U18AII2204: Object Oriented Programming and Data structures

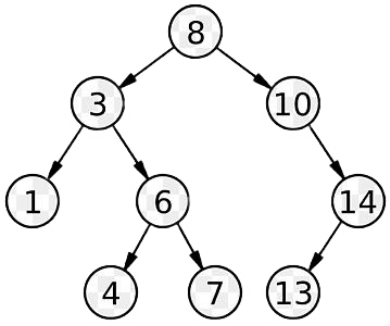
COURSE OUTCOMES

CO1: Understand the object oriented programming concepts and GUI.
CO2: Apply Overloading and concept of handling exceptions.
CO3: Demonstrate the concepts of data structures using python.
CO4: Develop the graph, sorting and search techniques of data structures.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	What is pure function in python? Give example.	CO1	[K_1]
2.	How to create a nested frame in python? Write the python code for the same.	CO1	[K_1]
3.	Develop python function 'Add' to add 'n' numbers and demonstrate polymorphism in it.	CO1	[K_2]
4.	Explain slicing operator with an example.	CO2	[K_2]
5.	What are the membership operators available in python? Mention its usage with an example.	CO2	[K_2]
6.	Differentiate stack and queue ADT.	CO3	[K_2]
7.	Apply in-order and pre-order traversal in the following tree and find the order in which nodes are visited.	CO3	[K_3]



8.	List any four applications of List ADT.	CO3	[K_1]
9.	Explain the representation of graphs with example.	CO4	[K_2]
10.	Compare the advantage of binary search over the linear search.	CO4	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Create a class Employee in Python with necessary members. Have an instance method to calculate the salary of the employee based on type (either as monthly salaried or daily wages (Rs.400 per day)). Create the object and invoke methods.	8	CO1	[K_3]
	b)	Define inheritance. List its types and explain the basic and multiple inheritance in detail with relevant examples.	8	CO1	[K_2]
12.	a)	Consider the college XYZ wish to create a GUI based registration form in python for the alumni meet with the fields such as Name, Mail ID, Gender and Batch. Create the alumni meet registration form for the college using tkinter.	8	CO1	[K_3]
	b)	Explain unified exception handling in python with example.	8	CO2	[K_2]
13.	a)	Explain custom exception in python. Write a python program to check the eligibility of age to vote or not and salary in the range of 10,000 to 25,000. If age or salary is not satisfied, handle it with custom exception.	8	CO2	[K_2]
	b)	Summarize the need for operator overloading in python? Write a python code to overload the arithmetic and comparison operators.	8	CO2	[K_2]
14.	a)	Explain the insert and delete operation in Linked List ADT and write python code to implement these operations.	8	CO3	[K_3]
	b)	Explain enqueue and dequeue operations of Queue ADT in detail.	8	CO3	[K_2]
15.	a)	Construct Binary Search Tree for the values 10, 25, 75, 2, 45, 13, 89, 65, 17, 36. Explain the procedure to delete the values 75, 13 and reconstruct the Binary Search Tree.	8	CO3	[K_3]
	b)	Explain the steps in constructing Max heap and for the following data: 25, 85, 10, 55, 65, 80, 50, 70, 35 and 95.	8	CO4	[K_2]
16.	a)	Apply merge sort to sort the given list 18, 24, 2, 50, 37, 7, 106, 15 and compare its performance with quick sort to identify the best.	8	CO4	[K_4]
	b)	Summarize graph traversal? Explain in detail about the Breadth First Search technique to find the minimum spanning tree with an example.	8	CO4	[K_2]

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