PRN:		Course Code :	UEC304

Second Year **B. Tech** End Semester Examination Winter 2023

Data Structures

Day and Date: Tuesday, 05/12/2023 Max Marks: **100**

Time : 10.30 am to 1.30 PM Duration: **03** hrs

Instructions: All questions are compulsory.

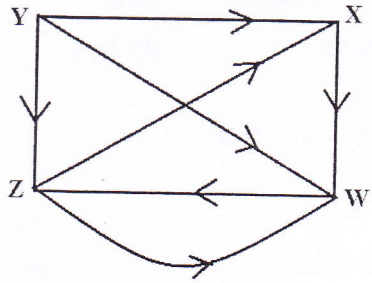
			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Explain in detail the Non-Linear data structure with diagram.	08	L1	CO1
	b)	Why we need to study data structures.	08	L3	CO1
		OR			
	b)	Classify different types of data structure explain any two linear data structure in detail.	08	L2	CO1
Q.2		**Attempt the following**			
	a)	Write a 'C' code for delete of element from the array	08	L3	CO2
	b)	What is linear search? Explain linear search algorithm.	08	L4	CO2
		OR			
	b)	What is Binary search? Write algorithm for Binary search.	08	L3	CO2
Q.3		**Attempt any two from the following**			
	a)	Write algorithm for Search operation of linked list.	08	L2	CO3
	b)	Explain representation of linked list in memory with diagram.	08	L1	CO3
	c)	Write algorithm for insert operation of linked list.	08	L2	CO3
Q.4		**Attempt any two from the following**			
	a)	What is Stack? Write 'C code for POP operation.	08	L2	CO4
	b)	Convert the following from infix to postfix **1)** A + B / C * (D +E / F-G) +H **2)** A * (B + D) / E – F * (G + H / K)	08	L3	CO4
	c)	Write algorithm for delete operation of the Queue.	08	L2	CO4
Q.5		**Attempt any Two of the following**			
	a)	Explain preorder tree traversing algorithm with example.	09	L2	CO5
	b)	Reconstruct the following tree: **In order:** H D I B E A F J C G K **Post order:** H I D E B J F K G C A	09	L5	CO5
	c)	Write short note on 'Counting number of binary tree' with example.	09	L4	CO5

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Q.6 **Attempt any Two of the following**

a) Write short note on graph traversing methods. 09 L1 CO6

b) Consider graph G in the figure below. Suppose the nodes are stored in an array in a memory as follows: X,Y,Z,W then 09 L1 CO6



I) Find Adjacency Matrix of G
II) Find indeg(X) and outdeg(X)
III) Are there any Source and Sink.
IV) Find Path matrix P.
V) Graph G is strongly connected or not?

Fig. Graph G

c) Write short note on Topological Sorting 09 L5 CO6

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