LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc./B.C.A. DEGREE EXAMINATION – **COMPUTER SCIENCE & APPL.**

THIRD SEMESTER – **NOVEMBER 2022**

UCS / UCA 3503 – DATA STRUCTURES

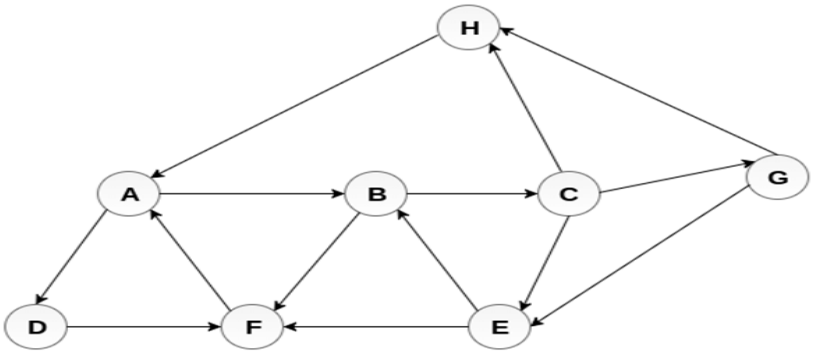
Date: 03-12-2022 Dept. No. Max. : 100 Marks

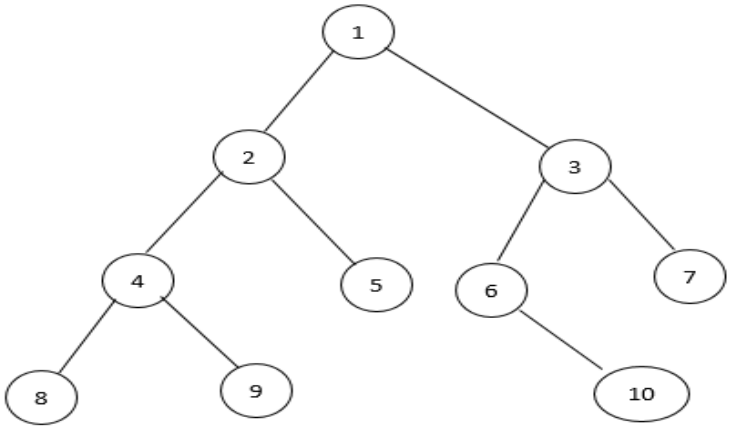
Time: 09:00 AM - 12:00 NOON

SECTION A

Answer ALL the Questions

1.	**Define the Following**		**(5 x 1 = 5)**
a)	Data structures	K1	CO1
b)	LIFO	K1	CO1
c)	Node of a Linked list	K1	CO1
d)	Edge of a tree	K1	CO1
e)	Merge sort	K1	CO1
2.	**Multiple Choice Questions**		**(5 x 1 = 5)**
a)	Which among this is not a Data Structure operation? (i) insertion (ii) deletion (iii) transition (iv) traversing	K1	CO1
b)	Queue has ____ ends (i) one (ii) two (iii) three (iv)four	K1	CO1
c)	The address part of the last node will be: (i) Next node (ii) First node (iii) Previous node (iv) Null	K1	CO1
d)	Graph can be as (A) Directed (B) Undirected (C) Cyclic: (i) A and B only (ii) A and C only (iii) B and C (iv) all A, B, C	K1	CO1
e)	Linear Search is applied on unsorted: (i)sorted list (ii) unsorted list (iii) doubly list (iv) indexed list	K1	CO1
3.	**Fill in the Blanks**		**(5 x 1 = 5)**
a)	Data structures can be classified in to _____ and _____	K2	CO1
b)	The succeeding term in the sum of two proceeding terms is called_____	K2	CO1
c)	Doubly linked list has addresses of _____ and _____ nodes.	K2	CO1
d)	_____ matrix format is used to store path in Graph	K2	CO1
e)	Merge sort uses _____ algorithm.	K2	CO1
4.	**State True or False**		**(5 x 1 = 5)**
a)	Pointer array points to the address of the data.	K2	CO1
b)	The pointer in stack always points to the first element.	K2	CO1
c)	Traversing is visiting each node of the list in order to perform a task.	K2	CO1
d)	Breath First search uses Stack logic to store visited element	K2	CO1

e)	Binary search can be performed on unsorted list of elements	K2	CO1
	SECTION B		
Answer any TWO of the following in 100 words			**(2 x 10 = 20)**
5.	Illustrate on the classification of Data Structures	K3	CO2
6.	Sketch out and explain Multi-dimensional array representation and usage.	K3	CO2
7.	Interpret on the evaluation of the expression (A+B*(C-D))/E	K3	CO2
8.	Construct the algorithm on operations of Linked list with example.	K3	CO2
	SECTION C		
Answer any TWO of the following in 100 words			**(2 x 10 = 20)**
9.	Classify and write about the terminologies of tree.	K4	CO3
10.	Experiment the Depth First Search on the graph:  Write the derived result.	K4	CO3
11.	Experiment Binary search of the element 73 from the following array of elements: 12, 24, 28, 31, 38, 44, 52, 57, 68, 73, 86, 99. Record the result.	K4	CO3
12.	Deduce Bubble sorting with the example: 6, 2, 5, 3, 9 and report the result.	K4	CO3
	SECTION D		
Answer any ONE of the following in 250 words			**(1 x 20 = 20)**
13.	Criticize on the Record structures, representation and variable length.	K5	CO4
14.	Evaluate the following operations of queue with example: i) insert an element ii) counting the number of elements iii) delete an element.	K5	CO4
	SECTION E		
Answer any ONE of the following in 250 words			**(1 x 20 = 20)**
15.	Facilitate and report on the Doubly Linked List Algorithms with examples.	K6	CO5
16.	Compose different traversals of the following tree:	K6	CO5



Record the individual results separately.

&&&&&&&&&&