C.U.SHAH UNIVERSITY **Summer Examination-2022**

Subject Name : Introduction to Algorithms & Data Structure

	Subject Code : 4CS04BDS1			Branch: B.C.A.		
	Semest	er: 4	Date: 04/05/2022	Time: 11:00 To 02:00	Marks: 70	
	 Instructions: (1) Use of Programmable calculator & any other electronic instrument is prohib (2) Instructions written on main answer book are strictly to be obeyed. (3) Draw neat diagrams and figures (if necessary) at right places. (4) Assume suitable data if needed. 					
Q-1		Attempt th	e following questions:			(14)
	<pre>a) b) c) d) e) f) g) h) i) j) k) l) m) n)</pre>	What is alg Which sym What is equ $\begin{bmatrix} 3.9 \end{bmatrix} = _$ Which two What is the Queue follo Which data What is the What is per What is sib DFS stands MST stands The root of	orithm? bol is used for input/outp ivalent set? 	but operation while drawing flowchat measure efficiency of an algorithm ch? e. vert infix notation to postfix notation ly linked list and circular linked list	urt? ? ?	
Atte	empt any	four questic	ns from Q-2 to Q-8			(14)
Q-2	a)	Explain sec	uence, selection and rep	etition in detail.		(17)
	b)	Explain sur	jective function, injectiv	e function, bijective function.		(5)
	c)	What is rec	ursion? Explain factorial	finding mechanism using recursion		(4)
Q-3		Attempt al	l questions			(14)
	a) b)	Explain cha	racteristics of algorithm.	node structure		(5)
	(U c)	Explain typ	dular arithmetic in detail	node structure.		(5)
	C)	Explain ino	uurar ariunnetic in uetan			(4)
Q-4		Attempt al	l questions			(14)
	a)	Explain typ	es of DEQUEUE.			(5)
	b)	Explain typ	es of binary tree.			(5)
			J.	ANN UNIVER	Page 1 of	3

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Explain topological sort. (4) c) Q-5 Attempt all questions (14) Explain push, pop, peek operation in stack with algorithm. (5) a) Explain adjacency list and adjacency matrix representation of graph. b) (5) Write In degree and Out degree of each vertices. (4) c) 2 1 3 4 5

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Q-7 Att

b)

Q-6

- Attempt all questions(14)a) Construct binary search tree of : 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24(7)Write down in order traversal, pre order traversal, post order traversal.(7)
- b) Write any three BFS traversal and any three DFS traversal (7)



Q-8	Attempt all questions
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a) Find MST using Krushkal's algorithm.

6

a) Explain binary search algorithm in detail.

Explain big oh notation, omega notation & theta notation.

Attempt all questions



(14)

(7)

(7)

(14)

(7)





b) Find MST using Prim's algorithm.





(7)