

DATA STRUCTURES (CY2102PC/DS2102PC/AM2102PC)

UNIT -I

INTRODUCTION TO DATA STRUCTURES

S.No	Ques tions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define ADT (Abstract Data Type)?	L2	CO1	PO1,PO2,PO4
2	What is a data structure?	L4	CO1	PO1,PO2,PO4
3	Define Stack and where it can be used?	L2	CO1	PO1,PO2,PO4
4	Distinguish between Arrays, Linked List?	L2	CO1	PO1,PO2,PO4
5	Define LIFO?	L1	CO1	PO1,PO2,PO4
6	List down the applications of List.	L1	CO1	PO1,PO2,PO4
7	What are the merits and demerits of Arrays using linked list?	L1	CO1	PO1,PO2,PO4
8	Why do we need data structures?	L4	CO1	PO1,PO2,PO4
9	Define Stack? Explain about application of stack?	L1	CO1	PO1,PO2,PO4
10	What are the postfix and prefix forms of the expression? $A+B*(C-D)/(P-R)$	L1	CO1	PO1,PO2,PO4
Part – B (Long Answer Questions)				
11	a) State the difference between queues and linked list?	L1,L 2	CO1	PO1,PO2,PO4
	b) Explain about operations in single linked list?	L2	CO1	PO1,PO2,PO4
12	a) Define Queue, how it is different from stack and how is it implemented?	L1	CO1	PO1,PO2,PO4
	b) How the queue is implemented by linked list?	L2	CO1	PO1,PO2,PO4
13	a) Explain the steps to convert infix to postfix. Convert the expression to postfix $(A+B)/C*(D+E)-F$	L3	CO1	PO1,PO2,PO4
	b) Explain Stack ADT and its operations	L2,L 3	CO1	PO1,PO2,PO4
14	a) Explain implementation of stack using linked list with the operations.	L4	CO1	PO1,PO2,PO4
	b) What are the advantages and disadvantages of Array over Linked List?	L5	CO1	PO1,PO2,PO4
15	a) Evaluate the following postfix expression using stack. Show each step $723+-382/+*2^3+$	L5	CO1	PO1,PO2,PO4
	b) Explain about queue and its operations	L5	CO1	PO1,PO2,PO4
16	a) Explain queue ADT	L2	CO1	PO1,PO2,PO4
	b) Explain array based implementation of stacks	L2	CO1	PO1,PO2,PO4

UNIT-II

DATA STRUCTURES (CY2102PC/DS2102PC/AM2102PC)

DICTIONARIES

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define linear list?	L1	CO2	PO1,PO2,PO3
2	Write ADT for Dictionary?	L1	CO2	PO1,PO2,PO3
3	What is mean by collision?	L1	CO2	PO1,PO2,PO3
4	Define hashing?	L1	CO2	PO1,PO2,PO3
5	What are the problems in hashing?	L5	CO2	PO1,PO2,PO3
6	What are the collision resolution methods?	L5	CO2	PO1,PO2,PO3
7	Compare Quadratic Probing and Double Hashing?	L5	CO2	PO1,PO2,PO3
8	What are the characteristics of good hash function?	L1	CO2	PO1,PO2,PO3
9	List out the different types of hashing functions?	L1	CO2	PO1,PO2,PO3
10	Define separate chaining?	L1	CO2	PO1,PO2,PO3
Part – B (Long Answer Questions)				
11	a) What are applications of hashing? b) Explain detail about separate chaining?	L1 L2	CO2 CO2	PO1,PO2,PO3 PO1,PO2,PO3
12	a) What are the different methods of collision resolution in hashing? Explain in brief? b) Insert the following list of elements into the hash table by using Quadratic probing(size of hash table is 10). 37,90,55,22,17,49,55.	L2,L 5	CO2	PO1,PO2,PO3
13	a) Explain Linear list representation and its operations? b) What is collision? and what are collision resolution techniques?	L3 L1,L 2	CO2 CO2	PO1,PO2,PO3 PO1,PO2,PO3
14	a) Distinguish between double hashing, rehashing, and extendible hashing? b) Write an algorithm of skip list operations insertion and deletion?	L2 L4	CO2 CO2	PO1,PO2,PO3 PO1,PO2,PO3
15	a) Explain Double hashing with following data to be placed in (hash table of size 10) 37,90,45,22,17,49,55 b) Explain about linear probing and quadratic probing?	L3 L2, L3	CO2 CO2	PO1,PO2,PO3 PO1,PO2,PO3
16	a) Explain Extendible hashing in detail? b) Write briefly about skip list representation?	L3 L2	CO2 CO2	PO1,PO2,PO3 PO1,PO2,PO3

UNIT-III

SEARCHTREES

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define searching?	L1	CO3	PO1,PO2,PO4,P O5
2	What is meant by linear search?	L1	CO3	PO1,PO2,PO4,P O5
3	What is meant by traversing? What are the different types of traversing?	L1	CO3	PO1,PO2,PO4,P O5

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4	What is an AVL Tree?	L1	CO3	PO1,PO2,PO4,P O5
5	What are the rotations in AVL tree?	L1	CO3	PO1,PO2,PO4,P O5
6	What is binary search?	L1	CO3	PO1,PO2,PO4,P O5
7	Write algorithm for RL rotation?	L1	CO3	PO1,PO2,PO4,P O5
8	Explain Array representation of BST?	L3	CO3	PO1,PO2,PO4,P O5
9	Write about LR rotation in AVL tree?	L1	CO3	PO1,PO2,PO4,P O5
10	Write about RR rotation in AVL tree?	L1	CO3	PO1,PO2,PO4,P O5

Part – B (Long Answer Questions)

11	a)	Explain tree traversals with example?	L3	CO3	PO1,PO2,PO4,P O5
	b)	Build an AVL tree with the following values: 20,11,5,32,40,2,4,27,23,28,50.	L6	CO3	PO1,PO2,PO4,P O5
12	a)	Describe a procedure to search an element in a AVL Tree?	L2	CO3	PO1,PO2,PO4,P O5
	b)	Explain LL and RR rotations in AVL tree construction?	L3	CO3	PO1,PO2,PO4,P O5
13	a)	Write a C program to perform searching operation using linear search?	L5	CO3	PO1,PO2,PO4,P O5
	b)	Define AVL tree? And Explain different rotations in AVL tree?	L5	CO3	PO1,PO2,PO4,P O5
14	a)	What are the steps to convert a general tree into binary tree?	L1	CO3	PO1,PO2,PO4,P O5
	b)	Analyze the 3 cases of deletion of an element from the binary search tree?	L4	CO3	PO1,PO2,PO4,P O5
15	a)	Write a C program to perform searching operations using binary search?	L5	CO3	PO1,PO2,PO4,P O5
	b)	Explain RL and LR rotations in AVL tree construction?	L3	CO3	PO1,PO2,PO4,P O5
16	a)	Describe in brief about linked representations of binary search tree?	L2	CO3	PO1,PO2,PO4,P O5
	b)	Describe a procedure to insert and delete an element into a AVL Tree?	L2	CO3	PO1,PO2,PO4,P O5

UNIT-IV

GRAPHS

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define Graph?	L1	CO4	PO1,PO2,PO3
2	What is sorting?	L1	CO4	PO1,PO2,PO3
3	What is the need of external sorting?	L1	CO4	PO1,PO2,PO3

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4	What are the two traversal strategies used in traversing a graph?	L1	CO4	PO1,PO2,PO3
5	What do you mean by internal and external sorting?	L1	CO4	PO1,PO2,PO3
6	Write a short note on representation of Graphs?	L2	CO4	PO1,PO2,PO3
7	What is visiting and traversing in graph?	L1	CO4	PO1,PO2,PO3
8	Define BFS?	L1	CO4	PO1,PO2,PO3
9	Define DFS?	L1	CO4	PO1,PO2,PO3
10	Write short notes on Poly phase merge?	L2	CO4	PO1,PO2,PO3

Part – B (Long Answer Questions)

11	a)	Explain DFS algorithm with example.	L3	CO4	PO1,PO2,PO3
	b)	Explain how to insert and delete an element into Max heap?	L3,L4	CO4	PO1,PO2,PO3
12	a)	Explain BFS algorithm with example.	L3	CO4	PO1,PO2,PO3
	b)	What is external model?	L1	CO4	PO1,PO2,PO3
13	a)	Explain the algorithm of Merge sort?	L3	CO4	PO1,PO2,PO3
	b)	Compare and contrast different sorting methods?	L5	CO4	PO1,PO2,PO3
14	a)	Distinguish between graph and tree?	L4	CO4	PO1,PO2,PO3
	b)	Describe the concept of graph traversals with an example?	L2	CO4	PO1,PO2,PO3
15	a)	Explain the process of Heap sort with example?	L3	CO4	PO1,PO2,PO3
	b)	Explain the model for External Sorting?	L3	CO4	PO1,PO2,PO3

UNIT–V

PATTERN MATCHING AND TRIES

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define trie?	L1	CO5	PO1,PO2,PO4
2	Define suffix trie?	L1	CO5	PO1,PO2,PO4
3	Define pattern matching?	L1	CO5	PO1,PO2,PO4
4	Explain short note on Pattern matching algorithms?	L2	CO5	PO1,PO2,PO4
5	Define Compressed Tries?	L1	CO5	PO1,PO2,PO4
6	Define Standard Tries?	L1	CO5	PO1,PO2,PO4
7	What are the advantages of Tries?	L1	CO5	PO1,PO2,PO4
8	What are the applications of pattern matching techniques	L2	CO5	PO1,PO2,PO4
9	What is mean by KMP LSP table?	L1	CO5	PO1,PO2,PO4

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10	What are the Applications of tries?	L1	CO5	PO1,PO2,PO4
Part – B (Long Answer Questions)				
11	a) Illustrate Boyer Moor algorithm with the following Text and Pattern Text: XYXZXXYXTZXYXZYYXXYXXYY Pattern: XYXZXY	L5,L6	CO5	PO1,PO2,PO4
	b) Explain about Compressed Tries and Suffix tries?	L2	CO5	PO1,PO2,PO4
12	a) Write an Algorithm for KMP pattern technique?	L2	CO5	PO1,PO2,PO4
	b) Distinguish between Suffix tries and Compressed Tries?	L4	CO5	PO1,PO2,PO4
13	a) Compare Tries and hash table?	L5	CO5	PO1,PO2,PO4
	b) What are the Applications of Trie?	L1	CO5	PO1,PO2,PO4
14	a) Explain about Compressed Trie?	L3	CO5	PO1,PO2,PO4
	b) List the Advantages and Disadvantages of Trie?	L1	CO5	PO1,PO2,PO4
15	a) Explain about Pattern matching algorithms and its applications?	L2	CO5	PO1,PO2,PO4
	b) Distinguish between Standard Tries and Compressed Tries?	L4	CO5	PO1,PO2,PO4

* **Blooms Taxonomy Level (BT)** (L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analyzing; L5 – Evaluating; L6 – Creating)



