

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)

MCA I Year II Semester (R16) Supplementary End Semester Examinations –July 2022

DATA STRUCTURES THROUGH C++

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	What is class and object? Describe the syntax for class and object specification with example. How does it accomplish data hiding? Give an example?	12M	1	1
OR				
Q.1(B)	a. What is a friend function? Explain what are the rules to be using a friend function? Illustrate with an example?	6M	1	1
	b. What is a constructor? How is constructor differing from other member functions? Illustrate with an example?	6M	1	1
Q.2(A)	Explain different forms of inheritance. Illustrate with an example each type with an example?	12M	2	2
OR				
Q.2(B)	a. Define pure virtual functions. Write a C++ program to illustrate pure virtual functions?	6M	2	1
	b. What is template? Explain class and function templates?	6M	2	2
Q.3(A)	a. What is stack? Write its applications?	6M	3	1
	b. Write an algorithm to evaluate the postfix expression?	6M	3	1
OR				
Q.3(B)	a. Define queue. Write its applications?	6M	3	1
	b. Compare and contrast the differences between arrays and linked lists.	6M	3	2
Q.4(A)	a. What is hashing? What are the characteristics of a good hash function?	6M	4	1
	b. Discuss about collision resolution techniques?	6M	4	2
OR				
Q.4(B)	How circular linked list is organized. Discuss its operations?	12M	4	2
Q.5(A)	What is a B- Tree? How elements are inserted and deleted from the B-trees?	12M	5	1
OR				
Q.5(B)	a. How to construct a heap? Explain heapify operation with an example?	6M	5	3
	b. Write an algorithm to implement the heap sort and calculate its complexity?	6M	5	3

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