Code No.: CS58101PC | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–M.TECH–I–Semester End Examinations (Regular) - March- 2023
ADVANCED DATA STRUCTURE AND ALGORITHMS
(CSE)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1. a) Define max heap with an example? [1M]
   b) List out applications of heap data structures? [1M]
   c) What are the advantages of hashing? [1M]
   d) How the hash function plays an important role in inserting an element in to hash table? [1M]
   e) Write the properties of red black trees? [1M]
   f) How the Balance factor is calculated in AVL tree? [1M]
   g) Define the Standard Tires with an example? [1M]
   h) What is Multiway search Tires? [1M]
   i) List the various network flow problems? [1M]
   j) Write the importance of geometric algorithms? [1M]

PART-B **(50 Marks)**

2. Write an algorithm to insert nodes into Binominal Heaps? [10M]

OR

3. Write the procedure to implement Min Heap and Max Heap? [10M]

4. Illustrate different Collision avoidance techniques with suitable example? [10M]

OR

5. Explain the following hash functions with an example (i) Folding method (ii) Multiplication method. [10M]

6. Elaborate the significance of Red-Black trees and its properties? [10M]

OR

7. What is a B-Tree? Specify its properties and describe the construction of a B-Tree for the following elements 8, 12, 15, 5, 40, 22, 4, 16,19,22 [10M]

8. Explain KMP Algorithm with an example and justify how it is different from Brute Force? [10M]

OR

9. Differentiate suffix trees and compressed tries with an suitable examples? [10M]

10. Explain various shortest path algorithms with neat diagrams? [10M]

OR

11. Write the pseudo code for Depth First Traversal Technique? [10M]

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