1 [A] Define the following terms with example [Any Six] [12]

1. Heap File
2. Double Pointer
3. Row Major Order
4. Level order Traversal
5. Hash Collision
6. Secondary Index
7. Forest

1 [B] Convert this expression into postfix notation [6]

C + ( D * (L + Y) / E ) + K * S + V

2 Answer the following questions in detail [Any Three] [18]

A. How double ended queue is different than circular queue? Write an algorithm with example to delete an element from output restricted deque

B. What are the reasons for bucket overflow? How to handle the bucket overflow? Explain with example

C. What is circular singly linked list? Write an algorithm to insert and search value in circular singly linked list

D. Insert the following values in B+ tree for a node with N=4 (pointers) for each node

10, 41, 17, 30, 35, 35, 60, 70, 8
3 Answer the following questions in brief [Any Six]

1. Create the min heap tree for: 29, 45, 31, 5, 78, 89, 56
2. Why dynamic memory allocation is more efficient than static allocation?
3. Explain the applications of priority queue
4. What is fixed length and variable length record representation?
5. Explain splay tree in brief
6. Search 27 with binary search: 5, 15, 27, 31, 36, 50, 60
7. What is space and time complexity of algorithm?

4 Attempt any FOUR questions

A. Sort the following data values in ascending order with selection sort
   2, 45, 32, 56, 18, 1, 18, 58
B. What is an expression tree? Create the expression tree for:
   \( C + D \ast L \ast J + Z / J \)
C. What is the height difference of AVL tree node? Explain double rotation
   with example
D. Write and algorithm to evaluate the postfix expression
E. Give the differences between queue, stack and linked list