13 - Multiway Search Trees

1. What is the worst-case runtime of inserting a new entry into a (2, 4) tree?
   - a) O(log n)
   - b) O(n)
   - c) O(n log n)
   - d) O(1)
   - e) O(n^2)

2. In a (2, 4) tree, a node that contains 3 keys is called a ____.
   - a) 4-node
   - b) 3-node
   - c) 2-node
   - d) overflow
   - e) underflow

3. What is the worst-case height of a (2, 4) tree?
   - a) O(log n)
   - b) O(n)
   - c) O(n log n)
   - d) O(1)
   - e) O(n^2)

4. When inserting a new entry into a (2, 4) tree, what condition might happen?
   - a) overflow
   - b) underflow
   - c) transfer
   - d) fusion
5. In a (2,4) tree with an underflow, how do you resolve the underflow if the underflowed node has only a 2-node sibling?
   □ a) fusion
   □ c) split
   □ b) transfer
   □ d) merge

6. In a (2,4) tree with an underflow, how do you resolve the underflow if the underflowed node has only a 4-node sibling?
   □ a) transfer
   □ c) split
   □ b) fusion
   □ d) merge

7. What operation is performed to resolve an overflow condition?
   □ a) split
   □ c) fusion
   □ b) transfer
   □ d) merge
Answer Key

1. a
2. a
3. a
4. a
5. a
6. a
7. a