

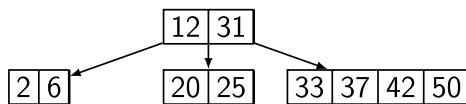
1. What is the minimum number of keys that can be stored in a B-Tree of order 64 and height 5?

- A. $2^{30} - 1$
- B. $2^{25} + 1$
- C. $2^{30} + 1$
- D. [Correct Answer] [Your Answer] $2^{26} - 1$
- E. $2^{25} - 1$

2. What is the maximum number of keys that can be stored in a B-Tree of order 16 and height 4?

- A. [Correct Answer] $16^5 - 1$
- B. $15 \times (16^4 - 1)$
- C. $4 \times 2^{16} - 1$
- D. $15 \times (4^{16} - 1)$
- E. [Your Answer] None of the other options are correct

3. Consider this B-Tree:



How many disk seeks are required during the execution of `Find(42)`? Assume that none of the data exists in memory when the call is made.

- A. 4
- B. [Your Answer] 1
- C. [Correct Answer] 2
- D. The number of disk seeks cannot be determined because we do not know the order of the tree.
- E. 5

4. Suppose a B-tree of order m contains n items. In the worst case, which expression gives the tightest upper bound on the number of disk seeks in one call to the `Find` function?

- A. [Your Answer] $O(m \log_m n)$
- B. $O(m \log_2 m)$
- C. $O(\log_2 n)$
- D. $O(m \log_2 n)$
- E. [Correct Answer] $O(\log_m n)$