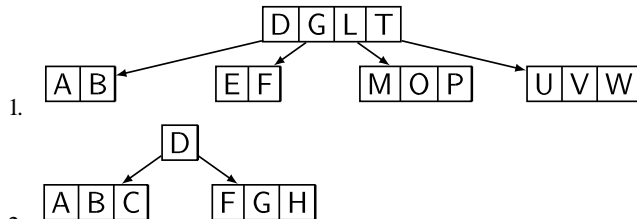


1. What is the minimum number of keys that can be stored in a B-Tree of order 64 and height 5?

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

2. Which of these two trees are valid B-Trees of order 4?



- A. Neither (1) nor (2) is valid.
- B. Only (1) is valid.
- C. Both (1) and (2) are valid.
- D. [Correct Answer] [Your Answer] Only (2) is valid.

3. What is the maximum number of keys that can be stored in a B-Tree of order 16 and height 6? A. None of the other options are correct

- B.  $6 \times 2^{16} - 1$
- C. [Correct Answer]  $16^7 - 1$
- D.  $15 \times (6^{16} - 1)$
- E. [Your Answer]  $15 \times (16^6 - 1)$

4. Which of the following statements is true for a B-tree of order  $m$  containing  $n$  items?

- (i) The height of the B-tree is  $O(\log_m n)$  and this bounds the total number of disk seeks.
  - (ii) A node contains a maximum of  $m - 1$  keys, and this bounds the number of disk seeks at each level of the tree.
  - (iii) Every Binary Search Tree (or AVL tree) is also an order 1 B-Tree.
- A. [Your Answer] Only item (ii) is true.
  - B. Two of the statements are true.
  - C. None of the statements are true.
  - D. Only item (iii) is true.
  - E. [Correct Answer] Only item (i) is true.