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

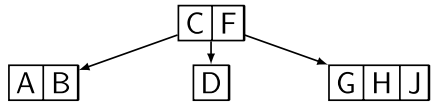
(i) The height of the B-tree is $O(\log_m n)$ and this bounds the total number of disk seeks.
(ii) A node contains a maximum of $m - 1$ keys, and this bounds the number of disk seeks at each level of the tree.
(iii) Every Binary Search Tree (or AVL tree) is also an order 1 B-Tree.

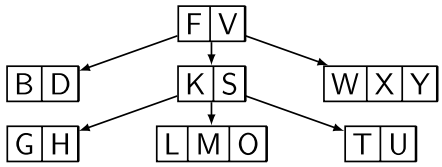
A. Only item (iii) is true.
B. [Correct Answer] Only item (i) is true.
C. None of the statements are true.
D. Only item (ii) is true.
E. [Your Answer] Two of the statements are true.

2. What is the minimum number of keys that can be stored in a B-Tree of order 32 and height 8?

A. $2^{30} - 1$
B. $2^{25} + 1$
C. $2^{30} + 1$
D. [Correct Answer] [Your Answer] None of the other options is correct.
E. $2^{26} - 1$

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

1.


2.


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

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

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