

## COP 5407: Spring 2019: QUIZ 3

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**Panther ID (No name please):**

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Mark all that apply. More than one may apply.

1. The worst-case time complexity of BST-SEARCH is:
  - (a)  $O(n^2)$
  - (b)  $O(n \log n)$
  - (c)  $O(n)$
  - (d)  $O(\log n)$
  - (e)  $O(h)$ , where  $h$  is the height of the tree
  - (f)  $\Omega(\log n)$
2. The worst-case time complexity of RB-INSERT is:
  - (a)  $O(n^2)$
  - (b)  $O(n \log n)$
  - (c)  $O(n)$
  - (d)  $O(\log n)$
  - (e)  $O(h)$ , where  $h$  is the height of the tree
  - (f)  $\Omega(\log n)$
3. OS-RANK and OS-SELECT can be efficiently implementing if the nodes of the RB-tree are augmented with:
  - (a) HEIGHT
  - (b) SIZE
  - (c) DEPTH
  - (d) RANK
  - (e) FREQUENCY