Quiz 8: ISAM & Indexing

<table>
<thead>
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<th>Initial Score (out of 10)</th>
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<tr>
<td>Name</td>
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<td>Student ID</td>
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- We will discuss the answers right after the quiz.
- You are to self-grade and record your actual initial score (above) as we do so.

Part A:

1) A secondary index is an index that has to have another candidate key (not the primary key) as its search key.

   **TRUE**  
   **FALSE**

2) An index is called a clustered index if its search key order corresponds to the physical (RID or primary key) order of the data records themselves.

   **TRUE**  
   **FALSE**

3) A clustered index can be used for any of the alternatives for its data entries (i.e., records, keys, or key lists), but the first alternative can only be clustered.

   **TRUE**  
   **FALSE**

4) Primary and secondary indexes can be only clustered and unclustered, respectively.

   **TRUE**  
   **FALSE**

5) A clustered index can be made using a composite search key.

   **TRUE**  
   **FALSE**

6) Sometimes scanning the whole relation would be faster than using an index.

   **TRUE**  
   **FALSE**

7) Sequential I/O access can lead to better performance than random I/O access because it reduces the transfer time component of the I/O cost.

   **TRUE**  
   **FALSE**

8) A given table can have multiple clustered and multiple unclustered indexes.

   **TRUE**  
   **FALSE**

9) In ISAM, every time new data is inserted, the whole or a part of the file will be sorted to keep the order of the index the same as the data order.

   **TRUE**  
   **FALSE**

10) This alternative of data entries may lead to variable-sized data entries even if records are fix-sized:

    1) Records as entries  
    2) RIDs or PKs as entries  
    3) RID or PK lists as entries

Part B:

Considering the following ISAM tree which is using alternative 1 (data entries). Show what changes occur in this tree when answering each question. Note: At each step, start with the tree still having the changes from the previous part(s). There is no need to re-draw the whole tree at each step; only showing the parts that change will suffice.

A) Insert 35
B) Delete 30
C) Delete 37