Heaps Review Quiz

Write your answers on a separate sheet of paper and check your answers with the answer key at the bottom of the page.

1. What are the two properties that make a binary tree a heap?
   a. Shape and size
   b. Shape and order
   c. Order and size
   d. Order and height
   e. Height and size

2. Draw the following list of numbers as a heap with the first number as the root: 77, 66, 55, 44, 60, 33, 55

3. The process of inserting a new node into the heap is called:
   a. Dequeue
   b. Enqueue
   c. New Heap
   d. New Node

4. The process of deleting a node from the heap is called:
   a. Dequeue
   b. Enqueue
   c. Move Heap
   d. Shorten Heap

5. In the delete operation on a heap, which node is always deleted?
   a. The last node
   b. The node which contains the smallest value
   c. The root
   d. Any node can be chosen to be deleted

6. In the insert operation, where is the new node initially inserted?
   a. At the top
   b. As a child to the root
   c. Next bottom right leaf
   d. Anywhere
7. A priority queue can be implemented as a heap because:
   a. The root can be easily be identified as the topmost priority.
   b. The heap is not always sorted so any value can be the top priority.
   c. The heap always has a left bottom node that can be the top priority.
   d. None of the above.

8. Draw the following heap as an array:

   ![Heap Diagram]

   - 88
   - 66, 77
   - 33, 44, 55, 75
   - 30, 22, 5

   **Diagram:**

   - The heap is a binary tree with the root at the top.
   - The left child of a node is to the left of the right child.
   - The values in the heap are 30, 22, 5, 33, 44, 55, 75, 66, 77, and 88.
   - The root is 88, which is the highest priority.
Heaps Review Quiz Answers

1. b

2. 
   \[ \begin{array}{c}
   77 \\
   66 \quad 55 \\
   44 \quad 60 \quad 33 \quad 55
   \end{array} \]

3. b

4. a

5. c

6. c

7. a

8. 
   
   \begin{array}{cccccccc}
   88 & 66 & 77 & 33 & 44 & 55 & 75 & 30 & 22 & 5
   \end{array}

If you did not get the correct answer, please go back and review the correct pages.