

Name:

Section:

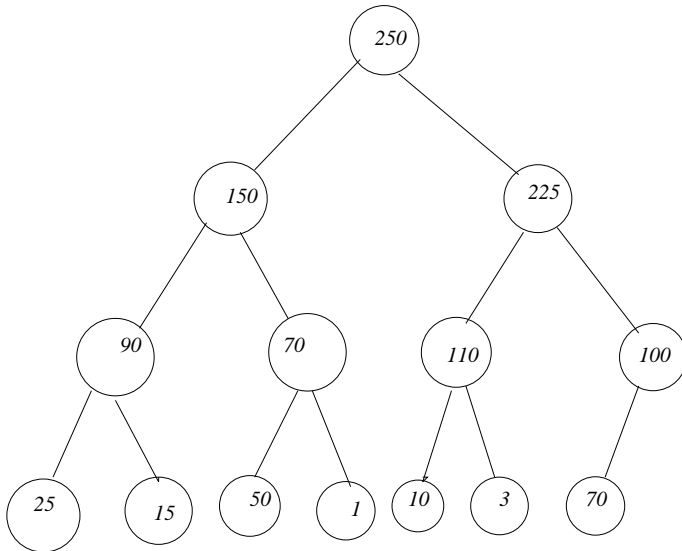
Student No:

**Closed Book, closed note exam. Show your work! we must follow your reasoning. Give the best result that you can give! Over 100 points is bonus.**

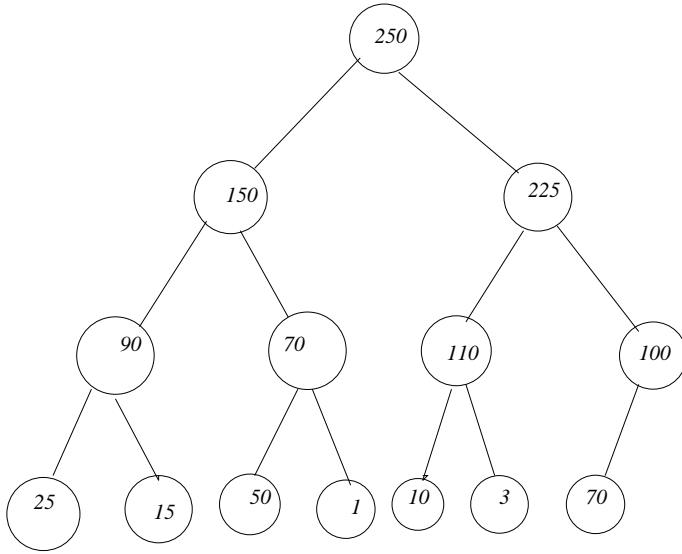
SIGNATURE .....

Time of Submission:

- 1. Given Heap  $H_o$ , apply successively  
i) apply twice deletemax operation to  $H_o$  ( **2 pts** )



ii) insert 300, insert 270 ( **2 pts** )



2. **Hashing**. Let  $h(k) = k \bmod 17$  and  $h'_2(k) = k \bmod 11$  and  $h_2(k) = h'_2(k)$  if  $h'_2(k) > 0$ , and  $h_2(k) = 1$  otherwise. Let  $h(k, i) = (h_1(k) + ih_2(k)) \bmod 17$ . Using the sequence  $h(k, i)$   $i=0, 1, 2, \dots$  We want to place following in a Hash table: 40, 21, 4, 67, 31, 38, 37, 54, 6, 23, 7, 33, 50

**4 pts**

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

– Solve the same input with  $h_1$  and linear probing

**2 pts**

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16