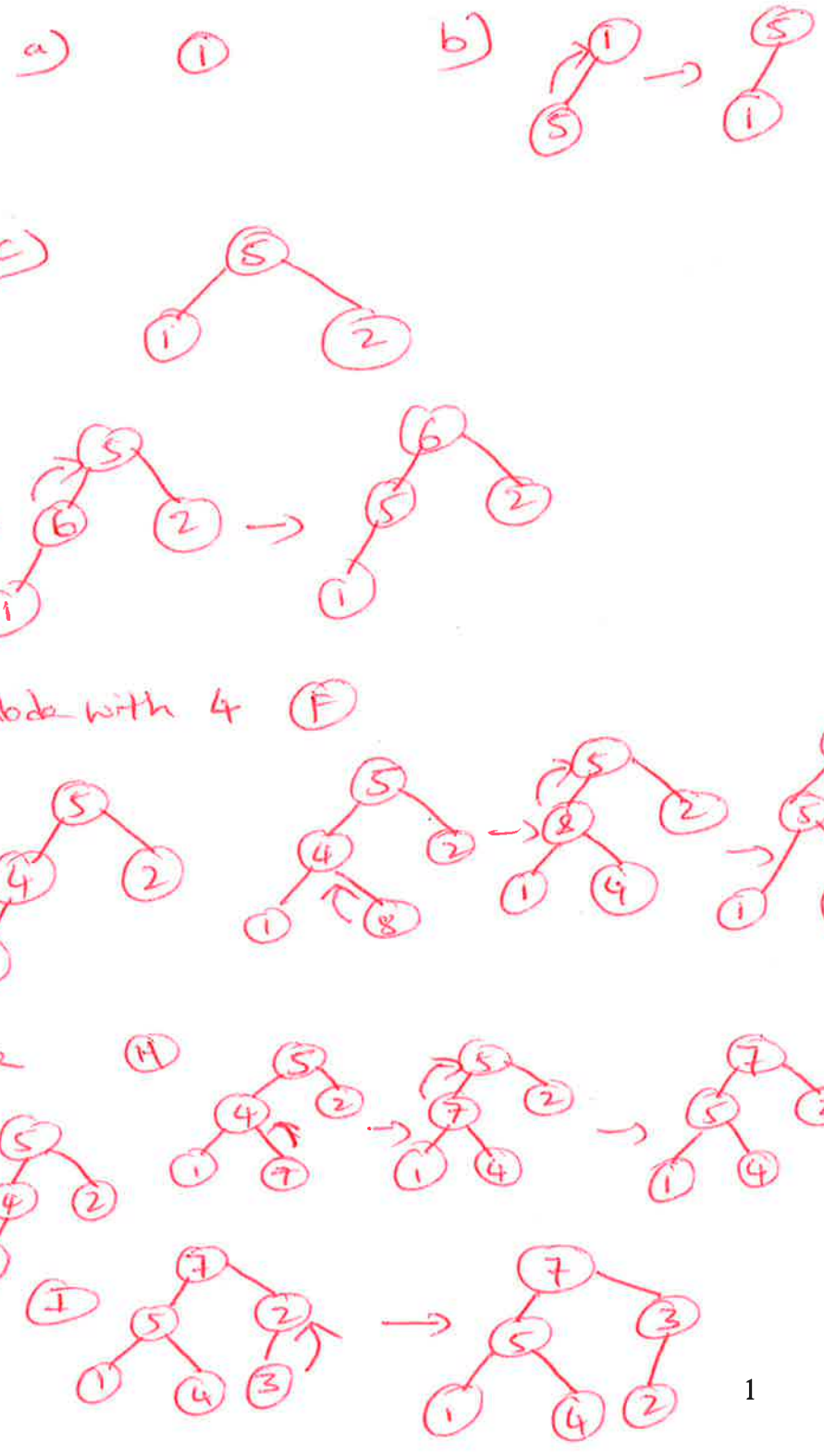
NAME: ANSWERS

CSCI 340-3 **Quiz 10** **Fall 2017**
Closed Book & Notes

1. Suppose the following operations (in the given order) are performed on an initially empty maximum heap. Show the heap (as a complete binary tree) after each of the following steps.

   a) insert (1)
   b) insert (5)
   c) insert (2)
   d) insert (6)
   e) replace (4)
   f) insert (8)
   g) remove ( )
   h) insert (7)
   i) insert (3)



2. Suppose there are six workers in a workshop with IDs: 147, 169, 580, 216, 974, 124. Suppose the hash table HT with the size 13 is indexed at 0, 1, 2, ..., 12. Show the contents of HT after these workers' IDs, in the order given, are inserted in HT using the hash function h (id) = id % 13. Use the linear probing technique to resolve the collisions.

Index	0	1	2	3	4	5	6	7	8	9	10	11	12
Key	169				147			124	580	216			974

① Insert 147

147 % 13 = 4

Insert at Index 4

② Insert 169

169 % 13 = 0

Insert at Index 0

③ Insert 580

580 % 13 = 8

Insert at Index 8

④ Insert 216

216 % 13 = 8

There is already an element at Index 8, hence insert it at the next available Index

Hence Insert it at Index 9

⑤ Insert 974

974 % 13 = 12

Insert at Index 12

⑥ Insert 124

124 % 13 = 7

Insert at Index 7