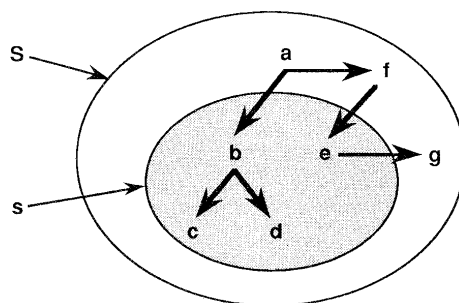


# Homework Exercise 1

**Due on 18th January**

1. Prove the following statement: *A quasi-order order  $Q$  over a set  $S$  results in a partial ordering over a set of equivalence classes of elements in  $S$ .*  
(2 Marks)
2. A partially-ordered set  $\langle S, \preceq \rangle$ , with a subset  $s \subseteq S$  is shown below.



For both  $S$  and  $s$  identify:

- (a) the lower and upper bounds
- (b) the least and greatest elements (if any)
- (c) the minimal and maximal elements.

(1.5 Marks)

3. Prove that in a quasi-ordered set, a subset need not have a lub or glb.  
(1.5 Marks)