1. (4 points) List four of the metaphors for handling XML (one word each).

**Solution:** Any four of the following:
- Text
- Tags
- Tree
- Template
- Thought

2. (12 points) Of the following statements, identify all that hold about XPath.
   A. XPath borrows the basic primitives of common filesystems, specifically, parent, child, and symbolic link
   B. We can simulate the effect of the preceding-sibling axis via a combination of the preceding, parent, and child axes (and no other axis)
   C. The Effective Boolean Value of a node set that contains the empty string is true
   D. For any expression that yields a node set of up to one member, appending \[1\] is a noop
   E. The smallest value possible for \(\text{last()}\) is zero
   F. Given an arbitrary XPath expression, \(E\) and positive integers \(i\) and \(j\) where \(i \leq j\), we always have \(E[j][i] = E[i]\)

**Solution:** B, C, D

3. (20 points) Of the following statements, identify all that hold about XQuery. (Below, \(\text{Set}\) and \(\text{Pred}\) are functions and \(x\) and \(v\) are variables.)
   A. XQuery forces us to hardcode the names of the elements to be output in the result of a query
   B. The XQuery syntax doesn’t limit how many for and let clauses we have in one FLWOR expression, as long as we have at least one
   C. The snippet \(\text{let } x := x[1]\) is acceptable; it shows how the value of \(x\) may be modified
   D. In XQuery, attribute can occur within element
   E. In XQuery, element can occur within element
   F. In XQuery, text can occur within attribute
   G. If every \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\) and \(\text{Set}(v)\) is not empty, then some \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\)
   H. If some \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\) then every \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\)
   I. It is possible that some \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\) is false and every \(x\) in \(\text{Set}(v)\) satisfies \(\text{Pred}(x,v)\) is true
   J. XQuery can produce non-XML results as output
Solution:  B, D, E, G, I, J