

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 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, Set and 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 `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