

Problem	1	2	3	4	5	Total
Points:	14	18	18	16	10	76
Score:						

**This homework assignment has 5 problems, for a total of 76 points.**

1. (14 points) Of the following statements, identify all that hold about e-business concepts.
  - A. Autonomy and heterogeneity are two names for the same concept
  - B. Dealing with open systems is difficult because they require us to construct tightly integrated solutions
  - C. A TP monitor cannot necessarily ensure consistency among the resources that it controls
  - D. In open environments, coherence is a more reasonable goal than consistency
  - E. The dynamism of an IT system refers to the freedom of system administrators to alter the configurations of the modules in the system
  - F. In a nutshell, what makes open business environments difficult to deal with are sociopolitical and historical factors such as that different business partners are free to act as they please and their business modules may be implemented in diverse ways
  - G. Some techniques that address closed environments may also be applied in open environments and can help improve robustness and productivity
  
2. (18 points) Of the following statements, identify all that hold about metadata and XML.
  - A. To use information well requires capturing context, yet to reuse information well requires that we can capture its meaning in a context-free manner
  - B. An XML namespace is not a resource and therefore it is bad practice to try to give it a URI
  - C. If we give a URI to an XML namespace, the URI resolves at the schema where the namespace is defined
  - D. Whereas in most beginner tutorials an XML document corresponds to exactly one tree, a complex XML document may correspond to two or more trees
  - E. XML documents that cannot be parsed are useful for capturing browser interfaces and configuration data
  - F. We sometimes cannot design XML documents that express important metadata for real-life situations, because XML doesn't allow attributes to have attributes
  - G. An element with no text, no attributes, and no subelements represents a null value
  - H. Specifying units within attribute values as in `<bill amt='USD 10'/>` is desirable because the metadata USD makes sure the value 10 won't be misinterpreted
  - I. Ultimately, any type of metadata can be useful only if the creators and readers of that metadata interpret it sufficiently similarly
  
3. (18 points) Of the following statements, identify all that hold about XPath.
  - A. The XPath expression `child::Song[Sgr]` finds the Sgr elements that are children of the Song children of the context node
  - B. The XPath expression `child::node()` would yield any of the nodes that `child::element()` yields
  - C. XPath supports what might be termed the *tags* view of an XML document
  - D. XPath's preceding axis helps find nodes that precede the context node, such as its preceding siblings, parent, and other ancestors
  - E. The XPath child and parent axes are inverses of each other: each node is a child of its parent node

- F. Every element in an XML document has a parent
  - G. If an XPath expression  $E$  yields a node sequence consisting of exactly one element, then  $E[1] = E[\text{last}()]$
  - H. A node that has one or more children is always the parent of each of its children
  - I. A node is always the descendant of each of its ancestors
4. (16 points) Of the following statements, identify all that hold about XQuery. (Below, Set and Pred are functions and  $\$x$  and  $\$y$  are variables.)
- A. The collector variable paradigm for programming works in XQuery
  - B. Any XQuery query that produces a result must include at least one for or let
  - C. Any FLWOR query that produces a nonempty result must include exactly one where clause
  - D. This course advocates using higher-level languages such as XQuery to extract information from XML documents
  - E. XML query languages such as XQuery draw upon previous work on query languages for object-oriented databases
  - F. XQuery shows how to query XML documents without using XML syntax
  - G. Given for  $\$x$  in Sequence . . . , where Sequence is some expression, if the body of the for terminates for each possible binding of  $\$x$ , the entire for expression must terminate
  - H. Given XQuery, a lot of XPath is redundant. For example, using no axes other than parent and child, we can write an XQuery function that would compute the *following siblings* of its argument element
5. (10 points) Of the following statements, identify all that hold about XSLT.
- A. Using XSLT, we can easily modify an input XML document that obeys one schema to produce a document that obeys an entirely different schema
  - B. A simple way to ensure that your XSLT stylesheet will terminate on all inputs is to only use the child, following, following-sibling, descendant, and descendant-or-self axes in XPath expressions within the stylesheet
  - C. The collector variable paradigm for programming works in XSLT
  - D. It is possible to have two templates in the same stylesheet such that one template matches `Song[1]` and the second template matches `Song`
  - E. Any legal XPath expression,  $X$ , may be used as a pattern on which an XSLT template may match, i.e., we can write `<xsl:template match='X'>...</xsl:template>`