1. (12 points) Of the following statements, identify all that hold about e-business concepts.

   A. Electronic business is a new direction for computer science because it introduces money into computer science

   B. Integration as opposed to interoperation is the preferred way of organizing open systems

   C. XML does not solve the problem of information system heterogeneity

   D. Both electronic business and social networks place importance on interactions among autonomous parties

   E. Dynamism is important to electronic business because the business partners of an enterprise can change

   F. There can be technical reasons for autonomy and heterogeneity even when the sociopolitical reasons don't apply

   > **Solution:**
   >
   > A is false: what is new is the interaction; people have been storing information about money for decades
   >
   > B is false: Interoperation is of course better
   >
   > C: XML doesn't *solve* the problem of heterogeneity because XML vocabularies can still be distinct
   >
   > D
   >
   > E
   >
   > F: for autonomy, lack of control; for heterogeneity, to reduce fragility

2. (10 points) Of the following statements, identify all that hold about e-business

   A. Messaging based on XML helps us engineer software systems that better address the challenges of heterogeneity than traditional, proprietary approaches

   > **Solution:** A is true: XML messaging facilitates addressing heterogeneity

   B. Market mechanisms for contracting tasks provide a basis for developing software systems that address the challenges of autonomy because market mechanisms support each prospective business partner independently deciding how much to bid for a particular contract

   > **Solution:** B is true: markets promote autonomy of business partners

   C. Market mechanisms for contracting tasks assume that any *relevant* heterogeneity among the bidders with respect to task descriptions has been adequately addressed

   > **Solution:** C is true: it would be inappropriate to compare competitive bids if they were about different tasks, although of course each bidder might realize the same tasks in different ways: hence, the emphasis on *relevant*

   D. The present state of affairs in IT where programming languages deal with objects, databases with tuples, and applications exchange documents provides the ideal way to realize IT systems

   > **Solution:** D is false: the resulting "impedance mismatch" leads to a lot of busy work in translating across these representations

    E. One thing we know for sure is that we don't have to contend with heterogeneity within the same enterprise

> **Solution:** E is false: heterogeneity is endemic in any enterprise large enough and old enough to have independently designed information system modules such as databases and applications

3. (20 points) Of the following statements, identify all that hold about architecture.

    A. According to Vernadat, most J2EE architecture components correspond to .NET components

    B. Enterprise models ought to give primacy to the business processes of the enterprise being modeled

    C. Enterprise models describe how a business works but need to be totally redone whenever systems and infrastructure technologies change

    D. Formulating architectures based on the skills required for different components is a bad idea

    E. Architecture frequently determines what products (commercial, open source, . . .) exist

    F. Open architecture is specified in terms of the products that need to be put together

    G. An enterprise model doesn't make sense for enterprises that are planning to use an external data center to host their storage and computation

    H. IT governance includes the human organizational aspects of how IT systems are administered

    I. Messaging middleware facilitates loose coupling in information systems

    J. Messaging middleware is of two main types: queues and topics

> **Solution:**
>
> A
>
> B
>
> C is false: the business processes would be largely unchanged even if the underlying technologies change; to achieve such independence is one of the main motivations for enterprise modeling
>
> D is false: a value of architectures is to separate responsibilities according to staff skillsets
>
> E: products are designed to fit into architectures; for example, that's why we have DBMSs, application servers, and such
>
> F is false: openness places an emphasis on interconnections
>
> G is false: need a model of the processes independent of where it is realized
>
> H
>
> I
>
> J