| Problem | 1  | 2  | 3  | Total |
|---------|----|----|----|-------|
| Points: | 14 | 50 | 46 | 110   |
| Score:  |    |    |    |       |

**This homework assignment has 3 problems, for a total of 110 points.**

1. (14 points)  Of the following statements, identify all that hold about e-business concepts.

   A. Autonomy entails heterogeneity: two business partners that are mutually autonomous are obviously of independent construction as well

   B. You would be well-advised to avoid a tightly integrated solution when you can—to simplify maintenance among other reasons

   C. TP monitors apply well in settings such as banks that must ensure consistency of the account data they hold

   D. Traditional techniques emphasize consistency at the cost of coherence and are therefore not suited to open environments

   E. The dynamism of an IT system refers to the fact that the staff in a real-life enterprise changes dynamically and therefore one can never presume that the same staff will be available for long

   F. What makes e-commerce intellectually different from conventional computer science is the extensive use of XML in e-commerce settings

   G. Some techniques created to deal with open environments may also be applied in settings that are not necessarily open in that they involve the same administrative domain

2. (50 points)  Of the following statements, identify all that hold about architecture.

   A. The purpose of an IT architecture is to identify the main uses of a system

   B. An architecture of a system provides a basis for how it is built and administered

   C. An architecture is largely determined by the physical components you wish to use to instantiate the architecture

   D. An IT architecture often maps naturally to the staffing of the resulting IT system in terms of the roles and skills of the people involved and how they are organized

   E. Adopting an architecture can often lead to additional organizational roles that you might not need if it weren't for the adopted architecture

   F. The primary benefit of an architecture is to specify the internal details of how a component would be implemented

   G. The openness of an architecture means that it doesn't specify the physical components but instead specifies the interconnections cleanly

   H. Something that is clearly a connector, such as a network, should not be modeled as if it were a component

   I. An architectural style specifies the patterns involving components and interconnections

   J. Protocols make sense as abstractions for networking architectures but do not make sense in the application layers

   K. A benefit of using protocols is that they make interactions explicit and modular, thereby decoupling implementations and enhancing their maintainability

   L. We can view a relational database schema in architectural terms wherein the tables are components and foreign keys are interconnections

M. The tiers in a three tier architecture represent a logical, rather than a physical, partitioning of an application

N. It may sometimes be helpful to have the presentation tier directly connect with the data tier; therefore, the three-tier architecture supports direct connections between the presentation and the data tiers

O. The three-tier architecture does not provide suitable high-level abstractions for describing service engagements among business partners

P. What motivate our choice of an architecture for a particular system are the requirements of the stakeholders of the system

Q. Governance refers to the administration of a system according to the requirements of the stakeholders of the system

R. The stakeholders of a system impose consistent requirements on it

S. The set of stakeholders involved in governance can change over time

T. Governance pertains to a system that is already implemented and operating; thus, governance is not concerned with the design or development of a system

U. Policies are motivated by requirements of flexibility and comprehensibility

V. One administrative aspect governance is not concerned with is accommodating change in a system as the requirements change

W. Governance is how a given system is managed

X. Governance relates stakeholders to the system architecture

Y. The primary stakeholders of a system are those who pay for its construction and maintenance

3. (46 points) Of the following statements, identify all that hold about architecture.

A. Adopting policies leads naturally to an architecture whose important components include the policy enforcement point and the policy decision point

B. The infrastructure modules carry the most direct bearing on the users' requirements

C. Applications, infrastructure, and systems form an hourglass view because many applications run on a few kinds of infrastructure, which maps to many systems modules

D. The business processes of an enterprise ought to drive the technical architecture adopted by the enterprise

E. The so-called ilities include nonfunctional requirements such as reliability and availability

F. What distinguishes one architectural approach from another is whether and how it addresses the functional requirements that the system being architected must meet

G. The end users of a system impose only the functional requirements on it

H. Protocols specify a representation for the information they help exchange, including data formats and data types

I. Protocols cannot be correctly specified using finite state machines

J. Messaging middleware supports asynchronous communication between end points

K. We should include local method calls in a sequence diagram that represents a business protocol

L. Given a statechart state $B$ is nested within state $A$, when the modeled entity is in state $B$, it is automatically in state $A$

M. When a statechart state $B$ is nested within state $A$, there can be no transition that begins from state $B$ and ends outside state $A$

N. An operational specification describes *what* we need, not *how* we achieve it

O. Our statecharts for delegating a commitment show two commitments in parallel, the original commitment and the delegated commitment

P. Reciprocal commitments, such as $C(\text{buyer}, \text{seller}, \text{ship}, \text{pay})$ and $C(\text{seller}, \text{buyer}, \text{pay}, \text{ship})$, entail that neither party has an incentive to act

Q. The only legal way to enact a commitment $C(\text{buyer}, \text{seller}, \text{ship}, \text{pay})$ is for the seller to ship the goods first and the buyer to pay later

R. A business partner in a service engagement can be viewed as a blackbox because its internal organization is irrelevant

S. A formal model for contracts enables us to check for potential design flaws and anomalies such as having unbounded scope

T. An implementation clause in a contract specifies the quality of service guarantees given by a contracting party

U. To transfer responsibility via a delegation, the original commitment should move to the pending state when the delegation occurs

V. Policies are the essential elements of contracts

W. A contract template, such as for leasing an apartment, would specify two or more roles along with the contract façades of each role