1. List the key issues stressed by an agile philosophy of software engineering.

   • The importance of self-organizing teams
   • Communication and collaboration between team members and customers
   • Recognition that change represents opportunity
   • Emphasis on rapid delivery of software that satisfies the customer
2. What are the six steps for requirements engineering?

- Inception
- Elicitation
- Elaboration
- Negotiation
- Specification
- Requirements validation

3. Describe the roles of the three sections of CRC (class responsibility collaborator) cards?

- Class name identifies the data object uniquely.
- Responsibilities are the attributes and operations for the class.
- Collaborators are those classes required to provide a class with information needed to complete a responsibility.

4. Why are evolutionary models considered by many to be the best approach to software development in a modern context?

Because time lines for the development of modern software are getting shorter and shorter, customers are becoming more diverse (making the understanding of requirements even harder), and changes to requirements are becoming even more common (before delivery), we need a way to provide incremental or evolutionary delivery. The evolutionary process accommodates uncertainty better than most process models, allows the delivery of partial solutions in an orderly and planned manner, and most importantly, reflects what really happens when complex systems are built.
5. List the types of models that might be used in requirements modeling and explain the role of each type of model

- Scenario-based (system from the users point of view)
- Data (shows how data are transformed inside the system)
- Class-oriented (defines objects, attributes, and relationships)
- Flow-oriented (shows how data are transformed inside the system)
- Behavioral (show the impact of events on the system states)

6. Describe the principle of information hiding as it applies to software design.

The principle of information hiding implies that modules only share information with each other on a "need to know" basis to achieve some specific software function. Hiding enforces the procedural constraints to both the module procedural detail and any data structures local to the module.

7. List three areas in which process models may differ from one another.

- Overall flow and level of interdependencies among tasks
- Degree to which work tasks are defined within each framework activity
- Degree to which work products are identified and required
- Manner in which quality assurance activities are applied
- Manner in which project tracking and control activities are applied
- Overall degree of detail and rigor of process description
- Degree to which stakeholders are involved in the project
- Level of autonomy given to project team
- Degree to which team organization and roles are prescribed
8. What is the relationship between requirement analysis design and design modeling? Explain in details.
   A bridge between requirements and design. Scenario, flow, behavior and class-based design in requirements analysis can be used to make a transition to the components of design including architecture, interface, data and component designs.

9. What are the contents of a use case?
   Actor, goal, pre-condition, description, post-condition, etc.
10. The following question is in reference to a hypothetical Gas Station that will be used to help manage an American-style gasoline or service station. Our hypothetical gas station control system (GSCS) basically provides two services:

- There is a small store that carries car parts. Inside the store is at least one cash register, operated by a cashier who is an employee of the gas station.
- There are a number of gas pumps, at which customers can park their cars, interact with the system to pay via credit card, and then pump their own gas. Alternatively, the customer can pay for his or her gas via cash or credit card by going into the store and paying directly to the cashier.

Provide two use cases regarding the GSCS. Describe the contents of these use-cases briefly.

Answers vary: Describe two use cases one for purchasing a part and the other for purchasing gas. List name of actors, goals, and brief description.