1. What is UML State machine Diagram?

A UML state machine diagram, illustrates the interesting events and states of an object, and the behavior of an object in reaction to an event.

2. Definitions: Events with example?

An event is a significant or noteworthy occurrence. For example:

• A telephone receiver is taken off the hook.

3. Definitions: States with an example?

A state is the condition of an object at a moment in time the time between events. For example:

• A telephone is in the state of being \"idle\" after the receiver is placed on the hook and until it is taken off the hook.

4. Definitions: States with an example?

A transition is a relationship between two states that indicates that when an event occurs, the object moves from the prior state to the subsequent state. For example:

• When the event \"off hook\" occurs, transition the telephone from the \"idle\" to \"active\" state.

5. What is State-Independent and State-Dependent Objects?

If an object always responds the same way to an event, then it is considered state-independent (or modeless) with respect to that event.

If for all events of interest, an object always reacts the same way, it is a state-independent object. By contrast, state-dependent objects react differently to events depending on their state or mode.

6. What is Deployment diagram?

A deployment diagram shows the assignment of concrete software artifacts (such as executable files) to computational nodes (something with processing services). It shows the deployment of

software elements to the physical architecture and the communication (usually on a network) between physical elements.

7. What is Component Diagrams?

The Component Diagram helps to model the physical aspect of an Object-Oriented software system. It illustrates the architectures of the software components and the dependencies between them. Those software components including run-time components, executable components also the source code components.

8. What is Operation Contract?

An operation Contract describes the change in the state of the system when a system operation is invoked.

9. What is meant by an axiom? List the two design axioms of object oriented design.

An axiom is a fundamental truth that always is observed to be valid and for which there is no counter example or exception.

Two design axioms:

Axiom 1: The independence axiom

Axiom 2: The information axiom.

10. Write the attribute presentation suggested by UML?

OCL can be used during the design phase to define the class attributes .The following is the attribute presentation suggested by UML.

Visibility name: type –expression-initial-value where visibility is

+ public visibility

protected visibility

- private visibility

Type – expression is language dependent specification .Initial – value is language dependent expression for the initial value of a newly created object.

11. What are the 3 relationships that can be shown in UML diagram? Define them.

1. Association how are objects associated? This information will guide us in designing classes.

2. Super-Sub Structure How are objects organized into super classes and sub classes? This information provides us the direction of inheritance.

3. Aggregation and a part of Structure what is the composition of complex classes? This information guides as in defining mechanisms that properly manage object within object.

12. What do you mean by layered architecture?

Layered architecture is an approach to software development that allows us to create objects that represents tangible elements of the business independent of how they are represented to the user through an interface or physically stored in a database.

13. Define Database Models And explain the categories.

A database model is a collection of logical constructs representing the data structure and data relationship within the database.

Database models is of two categories

1. Conceptual model

2. Implementation model

Conceptual Model: Focuses on logical nature of data. It deals with what is represented in the database.

Implementation Model: is concerned with how it is represented.

Part –B (16 Marks)

1. Explain UML state diagrams with an example?

2. Explain Operation contracts with an example?

3. Explain Mapping design to code with an Example?

4. Explain UML deployment diagrams with an example?

5. Explain UML component diagrams with an example?