OBJECT ORIENTED ANALYSIS AND DESIGN

FINAL EXAM

(This is an 1-Hour Exam. There are 6 pages.)

Student Name:	**Student ID**:
Signature:	

Q.1) What describes a **UseCase** best?

a) A UseCase is an ordered list of actions.
b) A UseCase is the specification of a set of actions performed by a system.
c) A UseCase describes an interaction between a user and a system.
d) A UseCase is a specialized operation

Q.2) What describes an actor best?

a) An actor is a user of a system.
b) An actor is a user or any other system that interacts with the subject.
c) An actor specifies a role played by a user or any other system that interacts with the subject.
d) An actor is an object that may execute its own behavior without requiring method invocation.

Q.3) An «**include**» relationship (used in Use Case diagram) is a specialized

a) dependency
b) DirectedRelationship
c) relationship
d) association
e) element

Q.4) Which of the following are valid multiplicities?

a) 0,1
b) *
c) 0..*
d) 23..42
e) 9..1
f) 1
g) −5..0

Q.5) Which project would be least likely to require a model?

A.  B.  C.  D. 

Q.6) What is a constraint? Select the best answer.

a) An expression that is always true
b) A condition expressed in natural language text or in a machine-readable language for the purpose of declaring some of the semantics of an element
c) A structured tree of symbols that denotes a (possibly empty) set of values when evaluated in a context
d) A boolean expression that restricts the values of an attribute

Q.7) Which of the following diagram types are defined in UML?

a) Composite structure diagram
b) Message sequence chart
c) Data flow diagram
d) Activity diagram

Q.8) The use case diagram is a
a) behavior diagram
b) interaction diagram
c) structure diagram
d) context diagram
e) requirements diagram

Q.9) What is a relationship? Select the best answer.

a) Relationship is an abstract concept that specifies the kind of relationship between elements.
b) Relationship is an arrow between two elements.
c) Relationship is an abstract concept that specifies some kind of relationship between two elements.
d) Relationship defines an association between elements.

Q.10) What is an encapsulation?

A. Allows direct manipulation of things that have been encapsulated.
B. Is often referred to as information hiding.
C. Causes costly and extensive maintenance.
D. Causes changes to affect clients during implementation.

Q.11) Which statement(s) about Use-Case-driven methodologies are true?

a) Focus on relationships between actors and the system
b) Based on the notion that software performs activities for users
c) Uses non-functional requirements to drive structure of the system
d) Must be iterative
e) Focus on the systemic qualities, such as reliability and scalability

Q.12) Which of the following entities can be represented by an object?

A. A physical entity such as Truck
B. A conceptual entity such as Chemical Process
C. A software entity such as Linked List
D. An algorithm entity such as Merge Sort

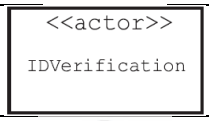
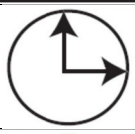
Q.13) Which of the following principles are related to object orientation?

A. Abstraction
B. Encapsulation
C. Modularity
D. Functional programming

Q.14) Match the object-oriented programming terms with their definitions.

	Term		Definition
	polymorphism	**A**	Generalization. Ignoring or hiding details to identify a commonality between different object instances.
	object	**B**	The ability to derive new classes from base classes. These new classes acquire attributes and methods of the base class.
	inheritance	**C**	The blueprint for an object.
	encapsulation	**D**	Grouping data structures and the methods, which act on the data structures, in one capsule.
	class	**E**	The measure of how much an entity (component or class) supports a singular purpose within a system.
	abstraction	**F**	A state in which variables which can refer, at run time, to objects of different classes.
	association	**G**	An instance of a class.
	coupling	**H**	A relationship between two classes and the subsequently object instances of those two classes
	cohesion	**I**	The degree to which classes within our system are dependent on each other.

Q.15) Write the name of each Use Case diagram symbol in the space allotted next to each symbol.

Symbol	Symbol Name
	
	
	
	

Q.16) Which are the characteristics of the requirements gathering workflow?

a) This workflow starts with business owner interviews.
b) This workflow requires you to model the high-level system structure to satisfy the non-functional requirements (NFRs).
c) The purpose of this workflow is to determine what the system must do.
d) You will create a Domain model during this workflow.
e) You will create initial Use Case diagrams during this workflow.

Q.17) Which are the characteristics of the Requirements Analysis Workflow?

a) This workflow includes recording Use Case scenarios.
b) This workflow starts with analyzing and Use Case scenarios.
c) The purpose of this workflow is to model how the system will support the use cases.
d) You will create a Domain model during this workflow.
e) You will create a Deployment diagram during this workflow.

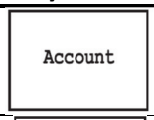
Q.18) What are the characteristics of the Architecture workflow?

a) You will create detailed Deployment diagram during this workflow.
b) The purpose of this workflow is to model the high-level structure of the system to satisfy the NFRs.
c) You will create a tiers and layers diagram during this workflow.
d) The purpose of this workflow is to model the high-level structure of the system to satisfy the FRs.
e.) You will refine the Design model during this workflow.

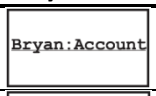
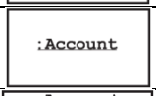
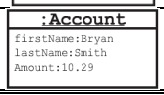
Q.19) Which are the characteristics of the Design workflow?

a) You will use an Activity diagram to verify Use Case diagrams during this workflow.
b) You will analyze the Use Case scenarios to determine additional detail during this workflow.
c) You will create a Solution model during this workflow.
d) You might create a Statechart diagram during this workflow.
e) The purpose of this workflow is to model how the system will support the use cases.

Q.20) Write the name of each Class diagram symbol in the space allotted next to each symbol.

Symbol	Symbol Name
	
	
1..*	
	
	
	

Q.21) Write the name of each Object diagram symbol in the space next to each symbol.

Symbol	Symbol Name
	
	
	

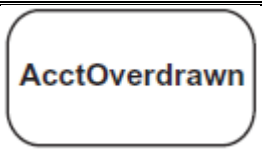
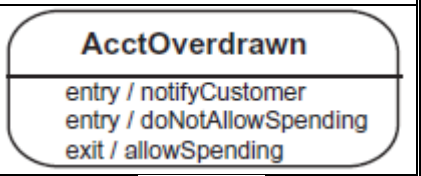
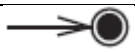
Q.22) Which of the followings are true about modularity?

a) Modularity is the breaking up of something complex into manageable pieces.
b) Modularity helps people to understand complex systems.
c) Modularity is ordering of abstractions into a tree-like structure
d) Modularity is a description of a set of objects that share the same attributes, operations, relationships, and semantics.
e) Modularity is the ability to hide many different implementations behind a single interface

Q.23) Polymorphism can be described as?

a) Hiding many different implementations behind one interface
b) Inheritance
c) Information placing
d) Generalization

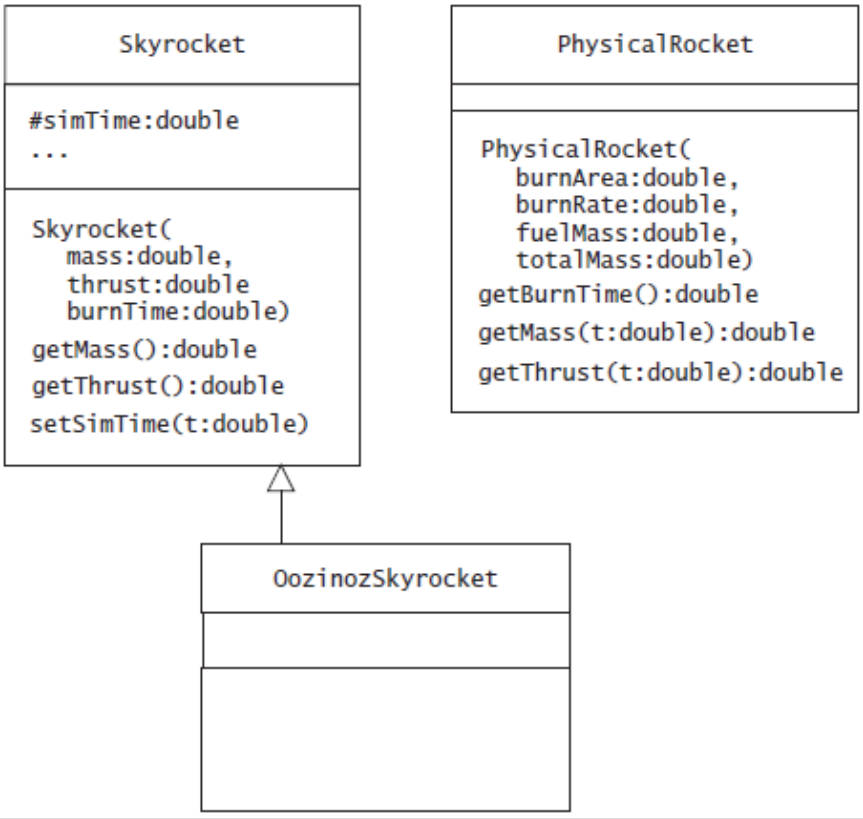
Q.24) Write the name of each State Machine diagram symbol in the space allotted next to each symbol.

Symbol	Symbol Name
	
	
	
	
	

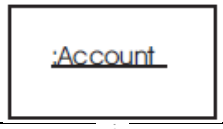
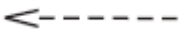
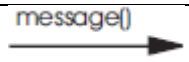
Q.25) Select the statement or statements about UML Object diagrams that are TRUE.

a) Object diagrams can be validated using Class diagrams.
b) Object diagrams show runtime links.
c) Object symbols can have three compartments: name, attribute, and an operations compartment.
d) Object diagrams often show object state.
e) An Object diagram is an instance of a class diagram.

Q.26) Complete the class diagram to show a design that allows **`OozinozRocket`** objects to serve as **`Skyrocket`** objects.



Q.27) Write the name of each Sequence diagram symbol in the space allotted next to each symbol.

Symbol	Symbol Name
	
	
	
	
	

Q.28) Write the name of each Activity diagram symbol in the space allotted next to each symbol.

Symbol	Symbol Name