Module 3 – OOSAD using UML
Chapter 01: Information Systems – What Are They?

Q1. Which one, you think, has brought immense change to the scope an nature of information systems?

A. The application of Internet
B. The application high-speed communication
C. The application of information technology (IT)
D. The rise of global market in modern times

Q2. Which of the following is or are the elements of an IS?

A. A human activity that needs information
B. Some stored data
C. An input method for entering data
D. Some process that turns the data into information
E. An output method for representing information
F. Human operators to operate and make the system functional

Q3. Which of the following is or are the typical advantages of using computers in a IS?

G. High speed
A. Low cost
B. Low risk
C. Reliability

Q4. All useful systems _____ their inputs into useful outputs.
Which one best fits the blank space?

A. deliver
B. calculate
C. transform
D. magnify

Q5. Which one is most important element of a system that endures?

A. Boundary
B. Environment
C. Control mechanism
D. Input

Q6. _____ allows communication between two systems.
Pick the most appropriate for the blank.

A. An interface
B. A control
C. A subsystem
D. A feedback loop

Q7. A system receives inputs from its _____.
Pick the most appropriate for the blank.

A. environment
B. boundary
C. subsystems
D. control mechanism

Q8. Many systems have a specialist sub-system whose function is to control the operation of the system as a whole. What do we call this type of sub-system?

A. Control sub-system

B. Balancing sub-system
C. Interface
D. Boundary

Q9. In some approach, inputs are fed into the system and outputs are delivered to the environment but internal processing is hidden. What do we call this type of approach?

A. Hidden approach
B. Sand-box approach
C. Black-box approach
D. Encapsulation approach

Q10. Control in a system relies on either _____ or_____.

A. Checking
B. Balancing
C. Feedback
D. Feed-forward

Q11. Which of the following is or are the typical advantages of computers?

A. High speed
B. Low cost
C. Reliability
D. Intelligence

Q12. _____ assist or control business operations.

A. Operational systems
B. Real-time control systems
C. Management support systems
D. Control Systems

Q13. Which one of the following is responsible for identifying the hardware components and configuration for implementing an IS strategy in an organization?

A. Business strategy
B. IS strategy
C. IT strategy
D. IS modeling

Q14. All useful systems transform their inputs into useful outputs. This transformation is the whole reason for building and operating the system.
Do you agree?

A. Yes
B. No

Q15. A system contains a set of subsystems. Each subsystem is a system of its own right. Is it true?

A. Yes
B. No

Q16. Which type of control mechanism samples system's input rather than output?

A. Feedback
B. Feed-forward

Q17. Which of the following is or the role of a computer in an IS?

A. Storage
B. Display

C. Calculation
D. Communication

Q18. Which one correctly defines the black box approach?

A. It treats a system an opaque box whose inputs and outputs are not known
B. It treats a system an opaque box whose internal workings are hidden completely hidden
C. It treats a system as an opaque box which takes inputs but delivers no outputs
D. It treats a system as an opaque box which takes no inputs but delivers outputs

Q19. Some features of a system does not present in any of its component but in the whole system. What do we call this type of properties?

A. Control property
B. Emergent property
C. Feedback
D. Feed-forward

Q20. _____typically operate physical equipment, often in safety-critical settings. Which one best fits the blank.

A. Operational Systems
B. Management support Systems
C. Real-time Control Systems
D. Security Systems

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Module 3 – OOSAD using UML
Chapter 02: Problems in Information Systems Development

Q1. Find out the main players in an IS development project?

E. End-users
F. Owners
G. Developers
H. Reviewers

Q2. Who are the end-users of an IS?

A. Those who will benefit from the system's outputs, directly or indirectly
B. Those who commission the project, pay for it or have the power to halt it
C. Those who will produce the software
D. Those only use the final output of the system

Q3. Which of the following is or are the problems in a IS from an end user's perspective?

A. A system that is promised but not delivered
B. A system that is difficult to use
C. A system that doesn't meet its users' needs
D. Systems that are delivered too late

Q4. Which of the following correctly describes vaporware?

A. Software that is talked about but never released,
B. Software that doesn't work correctly when it is used,
C. Software that users don't want.

D. Software that works well but very hard to maintain

Q5. Which of the following is or are the examples of problems in usability often raised by end-users?

A. Poor interface design
B. Unhelpful 'help'
C. Unreliability in operations
D. High cost of development

Q6. IS projects generally fail on grounds of either _____ or _____.
Pick the correct options for the blank spaces.

A. unacceptable quality
B. over cost
C. late delivery
D. poor quality

Q7. What are the main cause of problems in an IS projects?

A. Quality problems
B. Usability problems
C. Untimed delivery problems
D. Productivity problems

Q8. _____ are concerned with the management of the project.
Which one is the correct for the blank space?

A. Quality problems
B. Productivity problems

Q9. Which of the following is NOT a reason for the quality problems?

A. The wrong problem is addressed
B. Wider influences are neglected
C. Incorrect analysis of requirements
D. Poor project control

Q10. Those who are not directly related to an IS but are affected by the outcome of the IS are _____.

A. Pressure groups
B. Activists
C. Stakeholders
D. Beneficiaries

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Module 3 – OOSAD using UML
Chapter 03: Avoiding the Problems

Q1. Which of the following is or are the main categories of the problems found in an IS project?

A. Problems those relate to the management IS project
B. Problems those relate to the quality in the delivered product
C. Problems those relate to the skills of the people involved in IS project
D. Problems those arise from bad relationship between the developer team and the owner of the project

Q2. Which are the main areas to focus on to produce IS within budget, on time and providing required functionality?

A. Management of the IS project
B. Quality of the product
C. Skills of the people involved in IS project
D. Relationship of the developer with the owner of the project

Q3. Arrange the phases of a general problem solving process in order?

A. **Problem Redefinition**
B. **Finding ideas**
C. **Data gathering**
D. **Finding solutions**
E. **Implementation**

Q4. From a general perspective, building computerized information system can be viewed as a form of _____.
Which is the appropriate for the blank?

A. engineering process
B. craftsmanship
C. problem solving process
D. developing software

Q5. Which following are the main tasks of any information system development process?

A. Identifying what is required
B. Planning how to deliver what is required
C. Estimating cost of delivering what is required
D. Delivering what is required

Q6. Which of the following are the phases of a development process according to Larmen?

A. Plan
B. Elaborate
C. Evaluate
D. Build and Deploy

Q7. Which of the following is or are the advantages of subdividing the development process?

A. Techniques and skills specific to the different phases can be identified
B. Teams of developers specific skills can be allocated to a particular phase
C. Smaller tasks can be managed more easily with appropriate quality standard
D. Developers feel comfortable with smaller tasks and works happily

Q8. Which of the following is/are the benefits of subdividing the developments process?

A. Techniques and skills required to the different phases can be identified.
B. Developers with specialized skills can be allocated to the particular phase maximizing quality the chance that the activities are completed as soon as possible
C. Smaller tasks can be managed easily and with quality
D. Smaller tasks can be managed staying within allocated resources

Q9. Building software system is _____ from building any other system.

A. **Different**
B. **Similar**

Q10. Subdividing software developments project is known as a _____.

A. **Information System Development Cycle**
B. **Software Project Development**
C. **Information System Cycle**
D. **Life cycle**

Q11. Which of the following two activities precede the information system development process to ensure that the information system that is to be developed is appropriate to the organization?

A. **Strategic business planning**
B. **Strategic information systems planning**
C. **Business modeling**
D. **Activity modeling**

Q12. Strategic business planning and business modeling are very important for Systems that are _____.

A. **commercially oriented**
B. **not commercially oriented**

Q13. There is a distinction between system development and software development.

A. **true**
B. **false**

Q14. What is the objective of business modeling?

A. **To determine feasibility of an information system**
B. **To determine justification of an information system**
C. **To determine how an information system can support a particular business activity**
D. **To determine the requirements of an information system**

Q15. The traditional life cycle for the information system development model is known as _____.

A. **Waterfall life cycle model**
B. **Incremental development model**
C. **Unified software development model**
D. **Prototyping model**

Q16. Which of the following is/are the deliverable of the system engineering phase?

A. **High-level architectural specification**
B. **Software architecture specification**
C. **Functional specification**
D. **Design specification**

Q17. In which phase various fact-finding techniques are used?

A. **System Engineering**

B. Requirement analysis
C. Maintenance
D. Testing

Q18. Which of the following is or are disadvantages of the traditional life cycle (TLC)?

A. Activities can not be repeated easily
B. Unresponsive to the change to the client requirements
C. A simple sequential life cycle model and activities do not overlap
D. Each phase has defined deliverables

Q19. In software development a prototype is a _____.

A. Partially completed system to explore some aspect of the systems' requirement
B. Tested and final system
C. System for testing and discarded after testing
D. None of the above

Q20. Which of the following can be purpose of construction a prototype?

A. to explore some aspect of the systems' requirement
B. to determine whether a particular implementation platform can support certain processing requirement
C. the feasibility and usefulness of the system can be tested, even though, by its very nature, the prototype is incomplete
D. to analyze the user requirements easily and test for errors early

Q21. A prototype is intended as the final working system.
Do you agree?

A. Yes
B. No

Q22. Through which of the following ways, users can be involved in an information system development project?

A. As part of the development team
B. In fact gathering
C. Via a consultative approach
D. As a interface designer

Q23. Which one is Upper-CASE tool?

A. A CASE tool that provide support for the analysis and design
B. A CASE too that that provides support for the construction and maintenance of software

Q24. Which one is Lower-CASE tool?

A. A CASE tool that provide support for the analysis and design
B. A CASE too that that provides support for the construction and maintenance of software

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Module 3 – OOSAD using UML
Chapter 04: What is Object-Orientation?

Q1. What is an abstraction?

A. A form of representation which includes only what are important from a particular viewpoint
B. A form of representation which includes every possible detail about a concept whether it is important or not
C. A design pattern that solves a common problem.
D. It is an application framework

Q2. Which of the following are two main purposes that objects serve?

A. Objects are used to model an understanding of the application domain
B. Objects are used to understand data flow behavior in an application
C. Objects are understood as parts of the resulting software and provide basis for implementation
D. Objects are used as blueprints for class designer

Q3. Which of the following features all objects have?

A. State
B. Behavior
C. Identity
D. Security

Q5. Which of the following qualities every object must have?

A. State
B. Behavior
C. Identity
D. Position

Q4. Which of the following feature or features represent the condition that an object is in a particular moment?
Find out the appropriate word for the blank.

A. State
B. Behavior
C. Identity
D. All of the above

Q5. What is "state" of an object?

A. The condition of an object at a given moment
B. What the object can do
C. How an object responds to events
D. Uniqueness of an object

Q6. _____ represents the thing an object can do.
Find out the appropriate word for the blank.

A. State
B. Behavior
C. Identity
D. All of the above

Q7. _____ makes an object unique.
Find out the appropriate word for the blank.

A. State

B. Behavior
C. Identity
D. All of the above

Q8. Which of the following makes an object identifiable from a set similar or dissimilar set of object?
A. State
B. Behavior
C. Identity
D. All of the above

Q9. All objects are _____ of some class.
Which one best fits the blank.
A. Children
B. Sub-classes
C. Parent
D. Instances

Q10. _____ represents a particular instance of a class?
Which one best fits the blank.
A. An object
B. An interface
C. A package
D. A structure

Q11. Which of the following refers to a single object?
A. An instance
B. An interface
C. A package
D. A structure

Q12. "A descriptor for a collection of objects those are logically similar in terms of their behavior and the structure of their data"
What is the statement about?
E. Class
F. Instance
G. Generalization
H. Specialization

Q13. Which of the following features will be same for two instances of a class?
A. Structure of data they hold
B. Behaviors
C. Value of attributes
D. State

Q15. Which of the following is are true about an instance of a class?
A. An instance originates from a class
B. An instance holds information that remains unchanged during its lifetime
C. A instance is structured according to its class

D. An instance behaves according to its class

Q16. Which of the following two types of logical similarity ensure that two instances belong to the same class?

A. Both the two objects share a common set of attributes (descriptive characteristics)
B. Both the two object share the same identity
C. Both the two object share a common set of behaviors (operations)
D. Both the two objects use the same algorithm to perform a particular task

Q17. Which of the following is are true about generalization?

A. It is a taxonomic relationship between a more general element and a more specific element
B. The more specific element is fully consistent with the general element ands contains additional information
C. The more specific element can now relate itself to other class
D. The more specific element blocks all the features of inherited from the general element from transferring to the next level

Q18. Which of the following are true about generalization and specialization?

A. It is a hierarchic classification
B. As we move from the root towards the leaf a more specific element is found
C. Every element is fully consistent with the first element in the hierarchy
D. None of the above

Q19. Which of the following feature or features all sub-classes inherit from its super-class?

A. Information structure (characteristics)
B. Behavior
C. Identity
D. State

Q20. Which of the following are the rules of inheritance?

A. A sub-class always inherits all the characteristics from its super-class
B. A sub-class always inherits all states from its super-class
C. The definition of the sub class includes at least one detail not derived from its super class
D. A sub-class is always changes at least one behavior of its super-class

Q21. What does transitive operation refer to?

A. A sub-class can not inherit from more than one class
B. A sub-class always inherits all the characteristics from its super-class
C. All features of a class is carried over to a sub-class at next adjacent level
D. All of the above

Q22. What does "disjoint nature of generalization" refer to?

A. A sub-class cannot inherit from more than one class
B. A sub-class always inherits all the characteristics from its super-class
C. All features of a class is carried over to a sub-class at next adjacent level
D. All of the above

Q23. Objects communicate each other by _____.
Which one best fits the blank.

- **A. By sending messages**
- **B. By creating in-memory connection**
- **C. By implementing inheritance**
- **D. By using collaborator**

Q24. Objects communicate by _____.

- **A. sending message**
- **B. generating event**
- **C. sending signals**
- **D. encapsulating each other**

Q25. An object encapsulates data and processes to act on this data. These processes are called _____.
Which one best fits the blank.

- **A. Signature**
- **B. Protocol**
- **C. Operations**
- **D. State**

Q26. Each operation has a specific _____.
Which one best fits the blank.

- **A. Structure**
- **B. Argument**
- **C. Parameter**
- **D. Signature**

Q27. _____ is the definition of an object's interface.
Which one best fits the blank.

- **A. An Operation Signature**
- **B. An attribute**
- **C. A method**
- **D. A message**

Q28. In order to invoke an operation, its _____ must be given.
Which one best fits the blank.

- **A. Structure**
- **B. Argument**
- **C. Parameter**
- **D. Signature**

Q29. Operation signatures are also called _____.
Which one best fits the blank.

- **A. Message binding**
- **B. Message protocols**
- **C. Message calling**
- **D. Asynchronous operation**

Q30. Which of the following is or are true about polymorphism?

A. **Polymorphism allows one message to be sent to objects of different classes and each object responds differently**
B. **Polymorphism allows to create more than one object of a class in the same operation**
C. **Polymorphism allows to restrict access to an object's operations**
D. **All of the above**

Q31. "The ability of different methods to implement the same operation in different ways those are appropriate to its class"
This statement is about _____.

A. **Inheritance**
B. **Generalization**
C. **Specialization**
D. **Polymorphism**

Q32. Which of the following is or are true?

A. **An object's state is determined by the values of its attributes**
B. **An object maintains its state until an external stimulus change it**
C. **An object's state affects the way it responds to messages**
D. **An objects state can not be changed by its own operation**

Q1. "A descriptor for a collection of objects those are logically similar in terms of their behavior and the structure of their data"
What is the statement about?

A. **Class**
B. **Instance**
C. **Generalization**
D. **Specialization**

Q2. Which of the following features will be same for two instances of a class?

A. **Structure of data they hold**
B. **Behaviors**
C. **Value of attributes**
D. **State**

Q3. Which of the following is are true about an instance of a class?

A. **An instance originates from a class**
B. **An instance holds information that remains unchanged during its lifetime**
C. **A instance is structured according to its class**
D. **An instance behaves according to its class**

Q4. Which of the following is or are the rules of inheritance?

A. **A subclass always change the characteristics of its superclass**
B. **A subclass always inherits all the characteristics of its superclass**
C. **A subclass must redefine all the characteristics of its superclass**
D. **The definition of a subclass always includes at least one detail not derived from any of its superclasses**

Q5. Which of the following qualities every object must have?

A. State
B. Behavior
C. Identity
D. Position

Q6. What is "state" of an object?

A. The condition of an object at a given moment
B. What the object can do
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D. Uniqueness of an object

Q7. Objects communicate by _____.

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B. generating event
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D. encapsulating each other

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This statement is about _____.

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B. Generalization
C. Specialization
D. Polymorphism

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Module 3 – OOSAD using UML
Chapter 05: Modeling Concepts

Q1. The main focus of both analysis and activities is on _____.
Which one is the best for the blank space?

A. models
B. diagrams
C. standards
D. finding requirements

Q1. Which of the following is or are true about a model?

A. A model is usually both abstract and visible
B. A model is easier and quicker to build
C. A model has just right amount of detail and structure, and represent only what is important for the task at hand
D. A model can represent a real thing from any domain but not an imaginary thing

Q1. In IS development models are usually both _____ and _____.
Pick the appropriate words for the blank.

I. Abstract
J. Concrete
K. Visible
L. Invisible

Q2. Which of the following is or are true?

A. **A model must represent functional requirements**
B. **A model should not represent functional requirement**
C. **A model must represent non-functional requirement**
D. **A model should not represent non-functional requirement**

Q2. Which of the following statement or statements are true about models?

A. **Models are not easier to build, you need sufficient expertise and deep knowledge about the problem domain**
B. **Models can be used in simulations**
C. **You can choose which details to include in a model and what to ignore**
D. **Models can represent real or imaginary things from any problem domain**

Q4. Which of the following should be the qualities of a requirement model?

A. **Accurate**
B. **Complete**
C. **Unambiguous**
D. **Descriptive**

Q3. Which the following is or are the qualities of a model that is rich in meaning?

A. **It must be accurate**
B. **It must be complete**
C. **It must be unambiguous**
D. **It must contain enough detail of every aspect whether it is relevant in the context or not**

Q3. "A useful model has the right level of detail and represents only what is important for the task in hand"
Do you agree?

A. **Yes**
B. **No**

Q4. A model provides a complete view of a system at a particular stage and from a particular perspective.
Is this statement true?

A. **true**
B. **false**

Q5. Abstract shapes are used to represent some aspect of a system.
What does the above statement refer to?

A. **A model**
B. **A diagram**
C. **A structure**
D. **A method**

Q5. Why abstract shapes used in a diagram should follow a standard?

A. **To make a diagram less descriptive**
B. **To make sure that diagrams does get too complex**

C. To make sure that other people understand the diagram
D. To make sure that a diagram can be reused

Q6. The choice of shapes to use in a diagram is determined by _____.
Pick the appropriate one for the blank space.
A. the designer's personal choice
B. the window designing principle
C. ISO standard
D. a set of rules laid down by the particular type of diagram

Q7. Which rules or standard does an UML diagram follow?
A. ISO 9003
B. Rules laid down in OMG Unified Modeling Language Specification.
C. Standard laid down by ECMA
D. There is no rules or standard

Q8. Why should we follow standard in a diagram?
A. To ensure that it accurately represent users' actions
B. To ensure that other people can understand it and interpret it in the same way
C. To make a diagram correct
D. To ensure that a CASE tool can understand it

Q9. How can you make sure that other people can understand a diagram and interpret it in the same way it is intended to?
A. By including enough details
B. By hiding unnecessary details
C. By following a standard
D. By including prototype with it

Q6. Which of the following is or are the elements of UML diagram?
A. Icons
B. Two-dimensional symbols
C. Paths
D. Strings

Q10. UML consists mainly of _____ to represent concepts of an Object Oriented Information System.
Pick the most appropriate one for the blank space.
A. A icon
B. A symbol
C. A textual language
D. A graphical language

Q11. Which of the following element or elements make up a UML diagram?
A. icons
B. two-dimensional symbols
C. Paths
D. Strings

Q7. _____ provides a complete view of system at a particular stage and from a particular perspective.
Pick the most appropriate one for the blank space.

- **A. A model**
- **B. A diagram**
- **C. An icon**
- **D. A Symbol**

Q12. Consider the following two statements

- **(I) A model may consist of a single diagram**
- **(II) A model may consists of many diagrams**

Find out the right ones?

- **A. (I) is true**
- **B. (I) is false**
- **C. (II) is true**
- **D. (II) is false**

Q13. _____ is an abstraction of a system or sub-system from a particular perspective or view.
Pick the most appropriate one for the blank space.

- **A. A model**
- **B. A diagram**
- **C. A structure**
- **D. A package**

Q14. What is a UML package?

- **A. It is a diagram used to model deployment view of a system**
- **B. It is a diagram used to model test specification**
- **C. It is a diagram used to organize model elements and group together**
- **D. The is no package notation in UML**

Q15. Packages represent things in the system being modeled.
Is the statement true?

- **A. True**
- **B. False**

Q16. Along which dimensions do models change during the life of a project using an iterative life cycle?

- **A. abstraction**
- **B. formality**
- **C. level of details**
- **D. none of the above**

Q17. Which one is used to model business activities in an existing or potential system?

- **A. Use case diagrams**
- **B. Activity diagrams**
- **C. Sequence diagrams**
- **D. State charts**

Q18. _____ are used to describe a function of a system represented by a use case. Which on is the most appropriate for the blank space?

A. Use case diagrams
B. Activity diagrams
C. Sequence diagrams
D. State charts

Q19. Which of the following is or are the purposes of an activity diagram?

A. to describe a function of a system represented by a use case
B. to model a task
C. to describe the logic of an operation
D. to model the activities that make up the life cycle in the Unified Process
E. to describe an functionality of a system from the users' perspective

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C. Visible
D. Invisible

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B. Models can be used in simulations
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D. Models can represent real or imaginary things from any problem domain

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Do you agree?

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C. Paths
D. Strings

Q7. _____ provides a complete view of system at a particular stage and from a particular perspective.
Pick the most appropriate one for the blank space.

A. A model
B. A diagram
C. An icon
D. A Symbol

Q8. Along which dimension or dimensions, models change during the life of a project using an iterative life cycle?

A. Abstraction
B. Formality
C. Level of details
D. Size

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Module 3 – OOSAD using UML
Chapter 06: Requirements Capture

Q1. Which of the following is or are included in user requirements?

M. Clear understanding of how the organization operates at present
N. The problems with the current system
O. Many aspects of the current system will need to be carried forward into new system.
P. The requirements users have of a new system that are not in the current system
Q. How new system should operate in a new environment

Q2. Find out the proper reasons for arising new requirements in an organization?

A. Changing business and technical environments push organization to go for a new system
B. Governmental legislation changes force organization towards new direction
C. Over benefit leads organization to adopt innovative system
D. Organization structure changes like merging, de-merging of organization are often the causes for new requirements

Q3. What are categories of requirements?

A. Functional
B. Non-functional
C. Usability
D. Non-usability

Q4. Which of following can be treated as Functional Requirements?

A. Requirements those describe what a system must do
B. Requirements those are concerned with how well the system
C. Requirements those are concerned with matching the system to the way that people work
D. All of the above

Q5. Which of following can be treated as Usability Requirements?

A. Requirements those describe what a system must do
B. Requirements those are concerned with how well the system
C. Requirements those are concerned with matching the system to the way that people work
D. All of the above

Q6. Functional requirements are modeled with _____.

- **A. Use case diagrams**
- **B. Collaboration diagrams**
- **C. Sequence diagrams**
- **D. Class diagrams**

Q7. Which of the following should be included in functional requirements?

- **A. Processes that must be carried out**
- **B. Inputs that will come into the system in various forms**
- **C. Outputs that are expected from the system**
- **D. Data that must be hold within the system.**

Q8. Which of the following is or are NOT non-functional requirements?

- **A. Details of inputs and outputs of the system**
- **B. Performance criteria like response time**
- **C. Volume data assumed to be handled or stored by the system**
- **D. Security considerations**

Q9. Which one of the following is not a fact-finding technique?

- **A. Background Reading**
- **B. Interviewing**
- **C. Observation**
- **D. Brainstorming**

Q10. Which one of the following fact-finding technique is suitable to the organization and its business objectives?

- **A. Background Reading**
- **B. Observation**
- **C. Document Sampling**
- **D. Questionnaires**

Q11. In which cases you think "Background Reading" is the appropriate fact finding technique?

- **A. analyst is not familiar with organization**
- **B. initial stages of fact finding**
- **C. when quantitative data is required**
- **D. when a process needs to be understood from start to finish**

Q12. Where interviewing is the best technique to find facts?

- **A. At a stage where you need to see what really happens**
- **B. At the stage in fact finding when in-depth information is required**
- **C. At the stage when quantitative data is required**
- **D. At the stage when conflicting information from other sources needs to be resolved**

Q13. Who are the stakeholders in an Information System Development Project?

- **A. senior management—with overall responsibility for the organization**
- **B. financial managers—who control budgets**
- **C. managers of user departments**

D. representatives of users of the system

Q14. Find out the roles users' never play during the course of the project?

A. subjects of interviews
B. representatives on project committees
C. evaluators of prototypes
D. testers
E. trainees on courses
F. end-users of new system
G. developer of the new system

Q15. Which UML Diagram is used to document the functionality of the system from the users' perspective?

A. Activity Diagram
B. Use Case Diagram
C. Sequence Diagram
D. State Chart

Q16. Which one is not the purpose of Use Case Diagrams?

A. document the functionality of the system from the users' perspective
B. document the scope of the system
C. document the interaction between the users and the system using supporting use case descriptions
D. document the internal processes during the interaction between the users and the system

Q17. Use Cases are supported by _____.
Which one best fits the blank?

A. Stereotypes
B. Deployment Model
C. Behavior specifications
D. Dependencies

Q18. Which of the following can you use to produce behavior specification (to specify the behavior of each use case in a Use Case diagram)?

A. Use case description
B. UML diagrams , such as Collaboration diagram or Sequence diagram
C. Component diagram
D. CRC Card

Q19. Which element in a Use Case diagram represents the roles that people, other systems or devices take when communicating with a particular use case or use cases?

A. Actor
B. Communication Association
C. System or System boundary
D. Stereotype

Q20. Which element in a Use Case diagram represents interaction link between an instance of the use case and an instance of the actor

A. Actor
B. Communication Association
C. System or System boundary
D. Stereotype

Q21. "It represents a relationship between two modeling elements where a change to one will probably require a change to the other."
Which one is defined by the above statement?

A. A dependency
B. A stereotype

Q22. "It is a specialized UML modeling element that is constrained to behave in a particular way"
Which one is define by the above statement?

A. A dependency
B. A stereotype

Q23. Which stereotype in a Use Case Diagram is used to show that a particular use case provides an additional functionality that may be required in another use case?

A. Include
B. Extend
C. Association
D. Extension Point

Q24. Which relationship can be used to separate out a sequence of behaviour that is used in many use cases?

A. Include
B. Extend
C. Association
D. Extension Point

Q25. _____documents the interaction between user and a system in a way that is free of technological and implementation details.
Which one best fits the blank space to form an exact definition?

A. An essential use case
B. A real use case

Q26. _____ describes the concrete details of the use in terms of its design.
Which one best fits the blank space to form an exact definition?

A. An essential use case
B. A real use case

Module 3 – OOSAD using UML
Chapter 07: Requirements Analysis

Q1. To move from a use cases to class diagrams we produce collaboration diagrams. What do we call this activity?

A. Use case transition
B. Use case modeling
C. Use case realization
D. Use case collaboration

Q2. After capturing requirements, which of the following is or are the reasons for requirement analysis without going to design immediately?

A. We must analyze the logical structure of the problem
B. We must find out the full cost of implementation
C. We must understand how logical elements interact each other
D. We must know deployment structure of new system beforehand

Q3. Which of the following is NOT a reason for analyzing requirements?

R. To identify common elements
S. To identify pre-existing elements
T. To identify the most useful elements
U. To identify interaction between different requirements

Q4. Which two of the following Requirements Model must meet?

A. Confirm hat is the cost of new system
B. Confirm what what users want a new system to do
C. Confirm what the new system will look like
D. Specifies what designers must design

Q5. Find out the ways of modeling requirements analysis.

A. Directly based on knowledge of the application domain
B. Using CASE tools and their reverse engineering facilities
C. By producing a separate class diagram for each use case, then assembling them into a single model
D. All of the above

Q6. "The model elements those represent internal behavior of software that corresponds to a use case"
What does the statement refer to?

A. use case realization
B. use case
C. state chat
D. activity diagram

Q7. What is the purpose of a use case realization?

A. Identifying the actors that will interact wit with system to achieve a particular functionality of the use case
B. Identifying external resources that will influence a particular functionality

C. **Identifying the possible set of classes and understanding haw these classes might interact to deliver the functionality of the use case**
D. **Indentifying the no-functional criteria of the functionalities identified by the use case model**

Q8. To deliver the functionality of the use case, a set of classes participate and interact one another. What do we call these classes?

A. **Co-ordination**
B. **Collaboration**
C. **Realization**
D. **Package**

Q9. Which diagram shows elements taking part in a particular use case and how these elements interact one other?

A. **use case diagram**
B. **activity diagram**
C. **collaboration diagram**
D. **state chart**

Q10. Which UML diagram shows the participating instances and their interaction in terms of links in delivering the functionality of a use case?

A. **Collaboration diagram**
B. **Activity diagram**
C. **Object diagram**
D. **State chart**

Q11. ”A specialized UML model element that has specific meaning” – what is it?

A. **a stereotype**
B. **a diagram**
C. **a state**
D. **a elementary class**

Q12. What are the three analysis class stereotypes?

A. **Boundary**
B. **Control**
C. **Entity**
D. **Interface**

Q13. The common structure of what the class can ‘know’ – what does it refer to?

A. **operations**
B. **objects**
C. **instances**
D. **attributes**

Q14. Which of the following is or are true about attributes of a class?

A. **Part of the essential description of a class**
B. **The common structure of what the class can ‘know**
C. **Each object has its own *value* for each attribute in its class**
D. **Value of attributes of instance of a class determines the state of that instance**

Q15. If two objects can be linked, their classes have an association.

A. it is true
B. it is false

Q16. _____ is a logical connection between two or more objects.
Find most appropriate one for the blank space.

A. A link
B. An association

Q17. Links are often called _____.
Which one will be most appropriate for the blank space?

A. associations
B. connections
C. association instances
D. states

Q18. _____ are services that objects of a class can provide to other objects.
Pick the most appropriate one for the blank space.

A. Attributes
B. States
C. Operations
D. Associations

Q19. CRC stands for _____.
Pick the most appropriate one for the blank space.

A. Class–Reusability–Collaboration
B. Class–Responsibility–Collaboration
C. Class–Repository–Collaboration
D. Class–Responsibility–Correction

Q20. Which one involves in producing CRC cards?

A. Interviewing
B. Brainstorming
C. Observing
D. Background reading

Q21. Operations are implemented by _____.
Pick the most appropriate one for the blank space.

A. Properties
B. Methods
C. Events
D. States

Q1. Which of the following can be called Component-based development?

V. Assembling software from pre-existing components
W. Assembling software by building separate units and integrating these units together
X. Building components for others
Y. Building components for own use only

Q2. Why are components hard?

A. Components are built using low-level languages
B. Difficulties of model generations for components are built using structured languages rather than object-oriented languages
C. Programmers often are comfortable with others works - known as NIH syndrome
D. Components are hard to maintain

Q3. Which are the reasons that make component-based development hard?

A. NIH syndrome, which mainly afflicts programmers
B. Components generally are written in hard programming language
C. Modern object oriented languages do not support component building
D. Component are redeveloped using functionality-based decomposition which affects object orientation

Q4. Which one is not a contribution of object-orientation to component-based development?

A. Encapsulation of internal details makes it easier to use components in systems for which they were not designed
B. Generalization hierarchies make it easier to create new specialized classes when they are needed
C. Composition and aggregation structures can be used to encapsulate components
D. Hardly typed nature of object-orientation makes data secure

Q5. Which one is considered strong association?

A. Composition
B. Aggregation

Q6. Students attend several classes and if any class is cancelled, students are not destroyed. What type of association exists between a students and class?

A. Composition
B. Aggregation

Q7. A meal is made of ingredients. Ingredient is in only one meal at a time and if you throw a meal its ingredients are also lost. . What type of association exists between a meal and ingredients?

A. Composition
B. Aggregation

Q8. How two classes may differ?

A. In behaviour (operations or methods)
B. In data (attributes)
C. In associations with other classes

D. In how many objects originate from the classes

Q9. Which of the following are the elements of a pattern?

A. A context
B. Forces
C. A platform
D. A software configuration

Q10. _____patterns are groups of concepts useful in modelling requirements.
Which one best fits the blank space?

A. Analysis
B. Architectural
C. Design
D. Structural

Q11. _____patterns describe the structure of major components of a software system.
Which one best fits the blank space?

A. Analysis
B. Architectural
C. Design
D. Structural

Q12. _____patterns describe the structure and interaction of smaller software components.
Which one best fits the blank space?

A. Analysis
B. Architectural
C. Design
D. Structural

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Module 3 – OOSAD using UML
Chapter 09: Object Interaction

Q1. Objects communicate by _____.

A. sending messages
B. firing events
C. using API calls
D. using objects of Control class

Q2. When an object sends a message to another object, _____in the receiving object.
Which one of the following best fit in the gap?

A. an event is fired
B. a transaction is started
C. an operation is invoked
D. only one property value is changed

Q3. How do we describe Object Interaction?

A. Using use case diagram

B. Using state chart
C. Using the metaphor of Model
D. Using the metaphor of message passing

Q4. ''The structure of Instances playing roles in a behaviour and their relationships "– what do we call it?

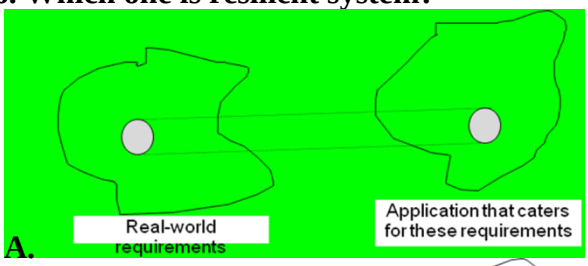
A. Event
B. State
C. Collaboration
D. Association

Q5. Which of the following is or are the benefits of distributing responsibilities appropriately among the classes?

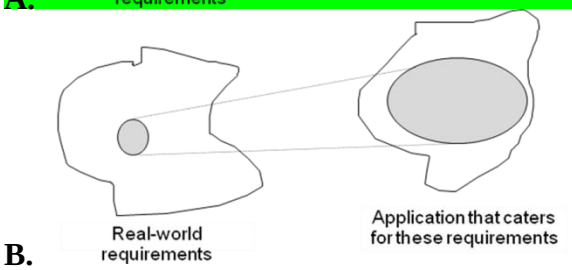
A. Each class does not become unduly complex and the class is easier to develop and maintain
B. Each class becomes self-contained and has a much greater potential for reuse
C. System becomes more resilient to changes in requirements
D. System becomes more secured and isolated from malicious use

Q6. Which one is resilient system?

A.



B.



Q7. Which is the focus of a model of object interaction?

A. To determine links between objects in order to support a particular user requirements
B. To determine the user interface requirements in order to support a particular user requirements
C. To determine the most appropriate scheme of messaging between objects in order to support a particular user requirement
D. To determine the object instances those play a role to support a particular user requirement

Q8. Consider following two statements

Statement 1: A particular object instance may play different roles in different contexts or collaborations

Statement 2: A particular object instance may play more than one role in a given context or collaboration

No find out the correct combination about the above statements.

A. Both Statement 1 and statement 2 are true
B. Both Statement 1 and statement 2 are false

C. **Statement 1 is true and statement 2 is false**
D. **Statement 1 is false and statement 2 is true**

Q9. _____ causes the invoking operation to suspend execution until the focus of control has been returned to it.
Which one appropriate for the blank space?

A. **A synchronous message**
B. **An asynchronous message**

Q10. _____ does not cause the invoking operation to suspend execution until the focus of control has been returned to it.
Which one appropriate for the blank space?

A. **A synchronous message**
B. **An asynchronous message**

Q11. Collaboration diagrams differ from interaction sequence diagrams in which of the following way?

A. **Collaboration diagrams cannot show the design detail that can be shown on a sequence diagram.**
B. **Collaboration diagrams only show the collaboration and not the sequence in which the messages are sent**
C. **Collaboration diagrams show explicitly the links between the objects.**
D. **None**

Q12. An interaction diagram should he consistent with the associated class diagram in various ways. Which of the following statements is true?

A. **It is always correct to show a message between two objects if there is an association between their classes.**
B. **The sending object must have the object reference of the receiving object before sending an object-scope message.**
C. **A message should not be shown between two objects if there is no association between their classes.**
D. **None is true**

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Module 3 – OOSAD using UML
Chapter 10: Specifying Operations

Q1. What is the reason for specifying operations from design perspective?

E. **Ensure users' needs are understood**
F. **Guide programmer to an appropriate implementation**
G. **Verify that the method does what was originally intended**
H. **Whether methods produce results within response time assumed**

Q2. What is the reason for specifying operations from analysis perspective?

A. **Ensure users' needs are understood**
B. **Guide programmer to an appropriate implementation**
C. **Verify that the method does what was originally intended**
D. **Whether methods produce results within response time assumed**

Q3. What is the reason for specifying operations from test perspective?

A. **Ensure users' needs are understood**
B. **Guide programmer to an appropriate implementation**
C. **Verify that the method does what was originally intended**
D. **Whether methods produce results within response time assumed**

Q4. A service can be defined as _____.
Which of the following best fits the blank space?

A. **a contract between the participating objects**
B. **a legal agreement between two entities**
C. **a functionality of a system that is bound to a rule**
D. **none of the above**

Q5. Which of the following is or are true about contacts?

A. **Contracts focus on inputs and outputs**
B. **Contracts hide Irrelevant details**
C. **Contracts exposes how service functionality will be delivered**
D. **Contacts emphasize service delivery, and ignores implementation**

Q6. Which one is an operation without side-effect?

A. **An operation destroys object instances**
B. **An operation sets attribute values**
C. **An operation carries out calculations**
D. **An operation requests data but do not change anything**

Q7. Which approach of logic specification focuses on how the operation might work?

A. **Algorithmic**
B. **Non-algorithmic**

Q8. Which approach of logic specification focuses on *what* the operation should achieve?

A. **Algorithmic**
B. **Non-algorithmic**

Q9. Which approach of logic specification are appropriate where correct result matters more than method to arrive at it?

A. **Algorithmic**
B. **Non-algorithmic**

Q10. Algorithmic operation specifications are _____ type as they focus on how the operation might work.

A. **White box**
B. **Black box**

Q11. Non-algorithmic operation specifications are _____ type as box— box—they focus on *what* the operation should achieve.

A. White box
B. Black box

Q12. Which of the following is or are not non-algorithmic techniques for specifying operations?

A. Pre- and Post-conditions pair
B. Decision table
C. Decision tree
D. Activity Diagrams

Q13. Which approaches of logic specification are appropriate where users must understand the procedure for arriving at a result?

A. Algorithmic
B. Non-algorithmic

Q14. Which of the following is or are not algorithmic techniques for specifying operations?

A. Structured English
B. Decision table
C. Decision tree
D. Activity Diagrams

Q15. Which of the following is or are the control structure in structured English?

A. Sequences of instructions
B. Selection of alternative instructions (or groups of instructions)
C. Iteration (repetition) of instructions (or groups of instructions)
D. Logic functions such as AND(), OR(), NOT()

Q16. How structured English differ from pseudo-code?

A. The syntax and vocabulary of Structured English resemble those of a specific programming language, while pseudo-code is language-neutral
B. The syntax and vocabulary of pseudo-code resemble those of a specific programming language, while Structured English is language-neutral
C. Pseudo-code is useful only for procedural programming languages, such as C, while Structured English is useful for any programming language, including object-oriented languages.
D. There is no difference

Q17. Which of the following best describes the main use of OCL?

A. OCL is used to describe the interaction between objects in more detail than is shown graphically in an interaction sequence diagram
B. OCL is used specifically to document operation specifications.
C. OCL is used to give precise definition to any constraints in a UML model that cannot be expressed clearly and unambiguously in a graphical notation.

Q18. Which of the following is or are the parts of an OCL statement?

A. Context
B. Property
C. Operation
D. State

Q19. Consider the OCL expression
Company
self.CEO->size <= 1
What does it mean?

A. The company cannot have more than CEO
B. The company may not have a CEO
C. The CEO of the company must be 1 foot high
D. There is no position higher than the CEO in the company

Q20. Consider the OCL expression
Person
self.husband->notEmpty implies
self.gender = female
What does it mean?

A. If the person has a husband, the person is a female
B. A female must have husband
C. A female must marry a male
D. A female cannot marry a female

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Module 3 – OOSAD using UML
Chapter 01-02

Chapter 1

The correct answer for each question is indicated by a ✓.

1 **Which of the following is least likely to serve as information from the perspective of your teacher?**

- **A)Your score for this multiple choice test.**
- ✓ **B)Your height on your 10th birthday.**
- **C)Which class you belong to.**

Feedback: Your teacher could use this to assess your learning, so it would be useful information.

2 **Which of the following is a good reason for considering a railway signalman as an information worker?**

- ✓ **A)His job depends on knowledge and communication.**
- **B)His job could be easily automated.**
- **C)His job affects the safety of people he doesn't know.**

Feedback: Yes, that's a good way to describe an information worker. It is a mistake to think information work must involve computers.

3 **Which of the following is a characteristic of all systems?**

- **A)A limitation.**
- ✓ **B)A boundary.**
- **C)A threshold.**

Feedback: Yes, all systems have a boundary chosen by the person who has decided to think about it as a system.

4 **Which of the following statements is not true?**

✓ ○ **A)No useful information system could exist without modern information technology.**

◉ **B)Many information systems existed in a different form before the invention of modern information technology.**

○ **C)Some information systems are only possible because of modern information technology.**

Feedback: Most things we do using modern information technology are not new in themselves – we have kept records, processed accounts, calculated wages, etc. for thousands of years.

5 **Which of the following is the best description of emergent properties?**

○ **A)Properties that emerge over time as a system matures, but are not there at the beginning.**

○ **B)Properties that emerge as soon as a system is switched on, but are not there when it is switched off.**

✓ ◉ **C)Properties that are shown only by the system as a whole, but are not shown by its parts.**

Feedback: That's right.

6 **Which of the following is an example of positive feedback?**

✓ ◉ **A)Rewarding a student for passing an assignment.**

○ **B)Telling a student how to pass an assignment.**

○ **C)Punishing a student for failing an assignment.**

Feedback: Yes. Positive feedback works by reinforcing the system's behaviour to produce more of a given output.

7 **Which of the following statements best describes negative feedback?**

✓ ◉ **A)Control signals that act to maintain a pre-determined level of output.**

○ **B)Control signals that act to reduce overall output.**

○ **C)Control signals that act to oppose hostile forces in the environment.**

Feedback: Yes. Negative feedback works by limiting the system's output when it gets too far above or below a standard that has been set.

8 **Which of the following is the best definition of 'subsystem'?**

○ **A)Something that is controlled by another system.**

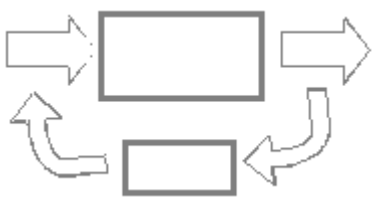
○ **B)Something that provides an input to a system.**

✓ ◉ **C)A part of a system that can be regarded as a system in its own right.**

Feedback: Exactly.

9 **Which of these diagrams illustrates a feedback control loop?**

○ **A)**



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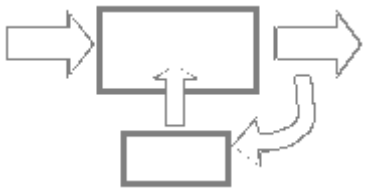
✓ ◉ **B)**



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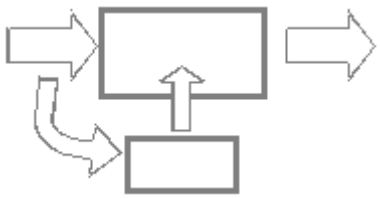
C) 

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Feedback: That's right. The control subsystem is sampling outputs and controlling the system's behaviour.

10 **Which of the following statements gives the best general description of the purpose of control subsystems?**

- **A)To switch a system on or off so that a constant level of output is achieved.**
- **B)To adjust the functioning of a system so that it produces the maximum possible quantity of output.**
- ✓ **C)To adjust the functioning of a system so as to keep some measurement of its performance or of its outputs within a predetermined range.**

11 **Systems analysis often begins by defining the boundary of the system that is under investigation. This is so that:**

- ✓ **A)The analyst does not waste time or effort on matters that are not relevant to the present study.**
- **B)The analyst does not get into fights with the managers of other departments.**
- **C)The analyst does not get out of his or her depth by studying things that are too hard to understand.**

12 **Which of the following best describes the views of Peter Checkland?**

- **A)Systems are a mental construct and do not exist in the real world.**
- ✓ **B)Regardless of whether or not a system is real, it is often useful to think about a problem situation as if it were a system.**
- **C)Systems are out there in the real world waiting to be discovered.**

13 **Which of the following statements best describes an interface in General Systems Theory?**

- **A)A screen that allows users to perform functions and to access the data within a system.**
- **B)An electronic connection between two systems that are located in different places.**
- ✓ **C)Any form of communication between different systems or subsystems.**

14 **Which of the following is not an example of purposeful control in a system?**

- **A)An alteration in the Bank of England base lending (interest) rate.**
- ✓ **B)A sudden change in the weather that damages a crop just before it becomes ready for harvest.**
- **C)A change in the tactics of a football team when a successful goal takes them into the lead.**

15 **Which of the following statements correctly distinguishes information from data?**

- ✓ **A)Information is directly relevant to an action or decision in some situation, whereas data has no specific must first be organised in some way to make it useful.**
- **B)Information is quite rare whereas there is always a lot of data available.**
- **C)Information is sorted into alphanumerical sequence whereas data is random.**

16 **What is the main purpose of an operational system?**

- **A)To assist a surgeon in carrying out an operation such as keyhole surgery.**
- **B)To help tactical managers to make decisions about current operations.**

✓ ◉ **C)To automate the routine tasks and activities in an organization.**

17 **Which of the following best describes the primary purpose of a management support system?**

○ **A)To relieve managers of work.**

◉ **B)To replace managers.**

✓ ○ **C)To help managers to do their work.**

18 **Which of the following statements best agrees with the approach taken by the authors of this book?**

◉ **A)Managers should always make sure that their organization has information systems that make the best use of the very latest in information technology.**

✓ ○ **B)Managers should only install information technology that is needed to implement information systems that their organization really needs.**

○ **C)Managers should make sure that the information systems and information technology in their organization are always at the leading edge of their industry.**

19 **Which of the following statements best describes business strategy?**

✓ ◉ **A)A business strategy identifies the long-term business goals and the main steps that will help to achieve them.**

○ **B)A business strategy identifies the strengths and weaknesses of the business and what can be done about them.**

○ **C)A business strategy identifies the steps that add value to the business and how to carry them out most profitably.**

Chapter 2

The correct answer for each question is indicated by a ✓.

1 **Approximately what proportion of information systems projects in the US were said to have failed by the 2001 Standish Group report?**

◉ **A)A fifth.**

○ **B)A third.**

✓ ○ **C)A quarter.**

Feedback: No, it was worse than that.

2 **Which of the following correctly describes vapourware?**

✓ ◉ **A)Software that is talked about but never released.**

○ **B)Software that doesn't work correctly when it is used.**

○ **C)Software that users don't want.**

Feedback: Yes, and it seems to have been very common.

3 **Which of the following is not an end user role?**

◉ **A)A manager who uses a printed report output from a system in carrying out a task.**

○ **B)A clerk who manually enters data into a computer system.**

✓ ○ **C)A sales assistant who records data on a printed form to be input into a computer system.**

Feedback: No, a manager who does that is using the system, albeit in an indirect way.

4 **Which of the following problems is not concerned with the usability of the system in question?**

✓ ◉ **A)A computerized till system that requires shop assistants to enter a fictitious price for items that are actually free.**

○ **B)A system where the same function key performs different actions on different screens.**

○ **C)An error message that is meaningless to the typical user.**

Feedback: Yes. This is a matter of function, not usability.

5 **Which of the following statements is the best description of a functional system?**

A)A system that was designed to meet a real business need.

B)A system that was delivered on time and within budget.

✓ C)A system that carries out all the tasks that are needed by its users.

Feedback: Yes. Though you might want to add "correctly" to this definition.

6 **The first attempt to computerize the London Ambulance Service emergency despatch system was abandoned in 1992 for which of the following reasons?**

A)The emergency despatch operators did not like working with the new computerized map displays.

✓ B)The new system proved slower to despatch ambulances to emergencies than the previous manual method of operation.

C)The new system was not delivered in time.

Feedback: That wouldn't be a good reason to abandon it after delivery!

7 **Which of the following is not a characteristic of the client role in relation to a development project?**

A)A client has influence over whether a project is allowed to start.

B)A client has the right to sack members of the project team for poor performance.

C)A client has the power to stop a project after it has started.

8 **Which of the following would not reasonably be considered a time-critical project?**

A)A project that must be completed on time to meet legislative requirements.

B)A project that must be completed quickly to give a business a competitive edge over its business rivals.

✓ C)A project whose schedule is running very late.

Feedback: That would make it time-critical, as there will be penalties for late delivery.

9 **Which of the following best describes requirements drift?**

✓ A)Incremental changes to the requirements for the new system that occur as the project progresses.

B)The demand from users for new functions to be added to a software system after delivery.

C)A tendency for different members of a project team to interpret any given requirement in a different way.

Feedback: If disagreements like this were not discussed and resolved, they would be likely to cause complete chaos, not drift.

10 **Which of the following is not a cause of requirements drift?**

A)Users may ask for more features to be included in the software as they learn more about what is available.

B)Business needs can change during the course of the project due to external events.

✓ C)The systems developers may not be skilled in the particular techniques or programming languages that are being used to develop the software.

Feedback: That is a common (and justifiable) reason for requirements changing during a project.

11 **Which of the following best describes the need to maintain adequate documentation of the models produced during software development?**

✓ A)Other developers may need to understand the details of a piece of software, either in order to modify it, or to modify another part of the system that depends on it in some way.

B)A project manager may need to assess the work output of developers so that the progress of the project can be monitored.

C)A project manager may need to identify the developer who was responsible for designing or coding a part of the system so that he or she can be held accountable for any bugs or errors.

Feedback: That is a useful thing to do, but it is not the main reason for documenting system models.

12 **Which of the following is not a quality problem in software development?**

A)User requirements are not identified correctly.

✓ B)Business needs change before the software can be delivered.

C)There is no clear business reason to undertake the project.

Feedback: No, that affects the quality of the software. If no-one knows what it should do, then how can you tell if the software meets a need?

13 **Which of the following is not a productivity problem in software development?**

A)The project is behind schedule and over-budget, but the software is still not complete.

B)During the implementation stage, it proves difficult to integrate the different software components.

✓ C)The project is cancelled due to internal politics in the organization.

Feedback: Yes. That is a matter of politics, not productivity.

14 **Which of the following is least likely to have a damaging impact on the usability of an information system?**

A)The designers are working under considerable pressure and, to save time, decide that they will not demonstrate the prototype screens to users, as originally planned.

✓ B)The programmers are running behind schedule and, to save time, decide to reduce the amount of documentation that they will write within their code.

C)The analysts believe that, since they have previously worked on a similar system for another company, there is no need to spend time on observing the way that users carry out their tasks.

Feedback: No. The analysts may be mistaken in thinking the two systems are similar, and as a result the design of the interface may be inappropriate for these users.

15 **Which of the following is not an important consideration when a company is trying to decide whether it should begin to do business on the Internet?**

✓ A)The design of the website.

B)The possible need for internal reorganization.

C)The business aims that will be met.

16 **Which of the following would be the most appropriate strategy when a project is stalled by an escalating workload of dealing with changes to the system requested by users?**

A)Increase the number of staff employed on the project.

B)Increase the project budget.

✓ C)Limit the number of changes.

17 **Which of the following best describes the reason for the crash of the online clothes retailer Boo.com in 2000?**

A)Potential customers in the UK were not yet comfortable with shopping online.

B)At the time, too few customers had confidence in the security measures for online payment transactions.

✓ C)The website software crashed on most PCs and images were slow to download, with the result that too few customers bought from the company.

18 **Which of the following best describes a stakeholder in relation to an information systems**

development project?

✓ A)Someone who is likely to be affected in some way by the system or by the process of its development.

B)Someone who stands to gain financially from the system.

C)Someone whose job will change as a result of the introduction of the system.

19 Which of the following is not relevant legislation for information systems developers in the United Kingdom?

A)The Computer Misuse Act (1990).

✓ B)The Freedom of Information Act (1997).

C)The Data Protection Act (1998).

20 Which of the following is the best definition of ethics?

A)A set of rules that apply to members of a professional association and give instruction on how to behave in certain circumstances.

✓ B)A branch of philosophy that deals with the rightness or wrongness of human character and conduct.

C)A collection of parables that illustrate the various dilemmas that can occur in daily life.

Feedback: No. You could use a set of parables to communicate a code of ethics, but a fully developed ethical code should also contain a set of general principles.

21 Which of the following is least likely to be considered as an ethical consequence of information systems development?

A)Some staff may lose their jobs due to the automation of certain tasks.

✓ B)A new operating system may make it easier for users to customize the appearance of their computer screen.

C)A new computer system may make it possible to gather and store more detailed personal information about individuals.

Feedback: No. That is clearly an ethical consequence of developing the system.

MCQ

Module 3 – OOSAD using UML
Chapter 03

[The correct answer for each question is indicated by BOLD FACE]

Question 1

Some of the tasks in the general problem-solving model are listed below. Which of the following lists these tasks in the correct sequence?

A. Problem definition, Finding solutions, Problem redefinition.
B. Data gathering, Finding solutions, Finding ideas.
C. Problem definition, Data gathering, Problem redefinition.

Question 2

Which of the following is a consequence of subdividing the development process?

A. It makes it more difficult to manage a project.
B. It allows teams of developers with specialist skills to be allocated to a particular phase.
C. It helps identify smaller tasks that can be completely finished.

Question 3

Which of the following best describes the term life cycle model?

A. It describes the way requirements for an application change at different stages in the life of the organization.
B. It describes how a computerized information system is used during its lifetime.
C. It describes the phases through which a development project passes from the inception of the idea to completion of the product and its eventual decommissioning.

Question 4

Which of the following is a true statement regarding a systems development project?
A. A systems development project is only concerned with developing a software system.
B. A systems development project is only concerned with developing systems for controlling devices or machines.
C. A systems development project may not involve software development.

Question 5

Which of following describes Strategic Information Systems Planning?
A. It is concerned with planning the implementation of information systems?
B. It is concerned with planning information systems development within the context of the organizational strategy.
C. It is concerned with how information systems can support strategic planning in an organization?

Question 6

Some of the phases of the Traditional Life Cycle are listed below. Which of the following lists is in the correct sequence for these phases?
A. Construction, Installation and Testing.
B. Requirements Analysis, System Engineering, Design
C. System Engineering, Requirements Analysis, Design

Question 7

Which of the following is true about system requirements?
A. They can be used to develop user acceptance tests.
B. They are mainly identified during systems engineering.
C. They change from one phase to another.

Question 8

Which of following is true about the criteria for acceptance tests?
A. They are best identified at the end of the design phase.
B. They are best identified at the end of requirements analysis.
C. They are best identified at the beginning of the testing phase.

Question 9

Which of the following statements is true about adaptive maintenance?
A. It is concerned with changing the system when requirements change.
B. It is concerned with ensuring the system data is adapted to suit changes in the organization.
C. It is concerned with maintaining the system so that it can adapt automatically to changes in the organization.

Question 10

One of the major challenges during system installation is which of the following?
A. Ensuring that the new software is correctly installed to use the computer effectively.
B. Avoiding unnecessary disruption and minimising the attendant risk of change.
C. Ensuring that both old and new systems run in parallel.

Question 11

Which of following is true about software construction in the traditional life cycle?

A. Only one programming language could be used.
B. Relational database management systems are not used.
C. The design is used to develop program code.

Question 12

Which of the following is a disadvantage of the traditional life cycle?
A. It does not allow the use of object-oriented technology.
B. Requirements change during development after the main system requirements have been agreed and are difficult to accommodate.
C. It separates requirements analysis and design.

Question 13

Iteration is problematic during the traditional life cycle for which of the following reasons?
A. Architectural decisions are difficult to change.
B. Ad hoc coding solutions may be used to address changes in requirements
C. Requirements will change during the project.

Question 14

Which of the following statements is true about a prototype system?
A. A prototype system is always discarded before the final production system is built.
B. Rapid development tools are only used to build prototype systems.
C. A prototype system is incomplete or lacks the resilient construction of the final production system.

Question 15

Which of the following is not an advantage of prototyping?
A. Prototyping is easy to manage.
B. Prototypes may be used to reduce misunderstandings about requirements.
C. Prototyping requires no analysis or design.

Question 16

Which of the following is not a workflow in the Unified Software Development Process?
A. Construction
B. Implementation
C. Test

Question 17

User involvement in software development is important for which of the following reasons?
A. It is cheaper to have users as part of the project team rather than professional software developers.
B. Users understand why the requirements cannot be met.
C. Users can influence the way a project proceeds by identifying the most acceptable course of action from various alternatives.

Question 18

Consider the following statements about CASE tools:
Current CASE tools can perform semantic checks on a set of diagrams modelling an information system.
Current CASE tools can perform syntactic and consistency checks on a set of diagrams modelling information system.
Current CASE tools can perform syntactic checks on a set of diagrams modelling information system.
Which of the following is true?

A. Statements A, Band C are true.
B. Statements A and C are true.
C. Statements B and C are true.

Question 19

Which of the following is an example of a systems development methodology?

A. The traditional life cycle.
B. The Unified Modelling Language.
C. The Unified Software Development Process.

Question 20

What are the key distinguishing features of an agile method?

A. They allow development staff to move freely from one project to another.
B. They are documentation light and are responsive to changes in user requirements.
C. They produce flexible systems that are easy to change.

MCQ

Module 3 – OOSAD using UML
Chapter 04: What is Object-Orientation?

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following best describes an object?

A. Part of a software system that is entirely unique.
B. A concept, abstraction or thing in an application domain.
C. A program that represents something tangible in the problem domain.

Question 2: Which of the following best describes abstraction?

A. A representation of something tangible.
B. A representation that can be stored in a software system.
C. A representation that contains only relevant details.

Question 3: Which of the following is not a reason for modelling objects?

A. To produce a design for part of a software system.
B. To understand an aspect of the application domain.
C. To separate data from process.

Question 4: What do all objects have?

A. State, behaviour and identity.
B. Behaviour, data and identity.
C. Instances, structure and similarity.

Question 5: Which of the following best describes object state?

A. The particular condition that an object is in at a given moment, determining its possible behaviours.
B. Which class the object belongs to.
C. The semantics of the object.

Question 6: Which of the following best describes object behaviour?

A. What the object is able to do to other objects.
B. What the object is able to do for other objects.
C. What the object is able to do to itself.

Question 7: Which of the following is a useful set of questions to ask when modelling an object, according to Rebecca Wirfs-Brock?

A. Who am I, what can I do and what do I know?
B. Where am I, what am I and who do I know?

C. What do I have, what can I get and what can I do?

Question 8: Which of the following is not a description of a class?

A. A set of objects that share the same behaviour, attributes, relationships and semantics.
B. An abstract descriptor for a set of instances with certain logical similarities to each other.
C. A set of objects that collaborate together to achieve some common objective.

Question 9: Which of the following best describes the relationship between an object and its class?

A. The structure and permitted behaviours of an object are defined by its class.
B. A class is a container that holds a collection of similar objects.
C. An object is an implementation of a class.

Question 10: What is generalization?

A. A process of broadening the scope of an object, such that it becomes more generally useful.
B. A kind of relationship between a more general element and a more specific element.
C. A process of collecting together objects into their respective classes.

Question 11: Which of the following best describes a type?

A. A description of a set of objects with similar behaviours.
B. A superclass in a generalization hierarchy.
C. A class with a characteristic that distinguishes it from all other classes.

Question 12: Which of the following is not an advantage of using generalization?

A. Generalization helps to organize a model so that the degree of similarity between classes is made more explicit.
B. A generalization hierarchy is easy to extend to fit a changing picture.
C. Generalization helps to encapsulate classes and subsystems so that their implementation is hidden from other parts of the system.

Question 13: How does generalization differ from inheritance?

A. It doesn't - they are the same thing.
B. Inheritance is a mechanism by which some OO languages implement generalization.
C. With generalization each class has only one superclass, whereas with inheritance each class has two or more superclasses.

Question 14: Which of the following is not a characteristic of a subclass?

A. A subclass can only have superclasses, it cannot have subclasses of its own.
B. A subclass inherits all the characteristics of its superclass.
C. A subclass includes at least one detail that is not shared by its superclass.

Question 15: What is meant by 'transitive operation' in the context of generalization and inheritance?

A. An operation in a superclass may be overwritten by a different operation in a subclass.
B. An operation in a superclass may not be overwritten by a different operation in a subclass.
C. A subclass inherits characteristics from all its superclasses at all levels.

Question 16: What is the significance of message-passing in an OO system?

A. Messages represent input from users that tells the software system what to do.
B. Objects exchange messages in order to communicate with each other.
C. Messages represent output to users that show the results of processing.

Question 17: What is a message protocol or signature?

A. A message protocol is a valid sequence of keystrokes by a user.
B. A message protocol is a valid sequence of operations in a series of different objects.
C. A message protocol is the interface to an operation.

Question 18: What is meant by multiple inheritance?

A. **Multiple inheritance signifies that a class simultaneously belongs to more than one generalization hierarchy.**
B. **Multiple inheritance signifies that a class has more than one superclass.**
C. **Multiple inheritance signifies that a class can have different superclasses at different times.**

Question 19: Which of the following best describes encapsulation?

A. **The implementation of an object can only be changed by its original programmer.**
B. **Data within an object can only be accessed by passing a valid message to one of its own operations.**
C. **Data within an object can only be accessed by passing a valid message to its class.**

Question 20: Which of the following best describes an object's interface?

A. **The view that an object presents to users of the system.**
B. **The links that an object has with other objects.**
C. **The complete set of signatures for all the object's operations.**

Question 21: Which of the following best describes polymorphism?

A. **The capacity of an object to behave in different ways at different times according to its current state.**
B. **The capacity of different objects to respond to a similar message in appropriate but different ways.**
C. **The capacity of an object to send different messages to different objects according to their class.**

Question 22: Which of the following is a valid reason why it is difficult to design event-driven software in a procedural manner?

A. **It is difficult to anticipate and design for all possible sequences of use.**
B. **Procedurally designed programs are not capable of responding quickly to events.**
C. **Procedural programs are only suitable for record-based data structures.**

Question 23: Which of the following is not an advantage of modular software design?

A. **Modular systems are typically more reliable in use.**
B. **Modular systems can be implemented in small, manageable chunks.**
C. **Modular systems are independent of the operating system that they run on.**

MCQ

Module 3 – OOSAD using UML
Chapter 05: Modeling Concepts

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following is not a reason for using a model?

A. **A model is quicker and easier to build than the real thing**
B. **We can use a model in simulations to test our ideas**
C. **We can use a model instead of building the real thing**

Question 2: Which of the following is not a model?

A. **An Airbus 380.**
B. **A scale model of an Airbus 380 to use in a wind tunnel.**
C. **An engineer's drawing of a cross-section through the fuselage of an Airbus 380.**

Question 3: Analysts and designers use models that consist of which of the following?

A. **Diagrams and text**
B. **Only diagrams**
C. **Only text**

Question 4: Which of the following do analysts and designers use diagrams for?

A. **To communicate ideas**
B. **To understand structures and relationships**
C. **Both 1 and 2**

Question 5: Which of the following do analysts and designers use diagrams for?

A. **To ensure that users don't understand the specification for a system**
B. **To communicate ideas to users and other analysts and designers**
C. **Neither A nor B**

Question 6: Why are system analysis and design diagram standards important?

A. **They promote communication between team members**
B. **They provide work for international standards committees**
C. **They prevent systems analysts' clothes from shrinking in the wash**

Question 7: Which of the following are the rules that modelling techniques should enforce?

A. **Simplicity of representation, external consistency, completeness and network representation**
B. **Simplicity of representation, internal consistency, completeness and hierarchical representation**
C. **Simplicity, internal consistency, completeness and hierarchical symbols**

Question 8: Which of the following is true?

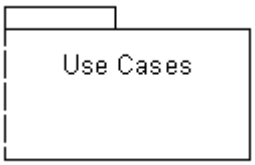
A. **Icons can contain two-dimensional symbols**
B. **Two-dimensional symbols can contain icons**
C. **An icon contains at least one vertex and one string**

Question 9: Which of the following is true?

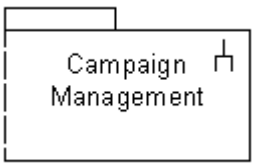
A. **A model consists of one and only one diagram**
B. **A diagram contains at least one model**
C. **A model contains diagrams**

Question 10: Which of the following is the UML notation for a model?

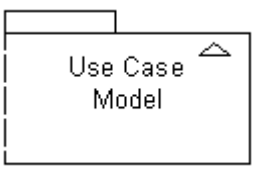
A.



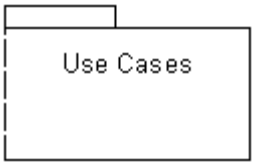
B.



C.



Question 11: Which of the following does the Figure below show?



A. **A model.**
B. **A sub-system**
C. **A package**

Question 12: As a model is developed it, which of the following does it become?

A. **More abstract**
B. **More detailed**
C. **Less formal**

Question 13: Which of the following is not a purpose for using activity diagrams?

A. **To show the sub-systems that make up a system**
B. **To model a task**
C. **To describe the logic of an operation**

Question 14: Which of the following does the figure below show?

A. **Two actions joined by a control flow.**
B. **Two control flows joined by an activity.**
C. **Two actors joined by a control flow.**

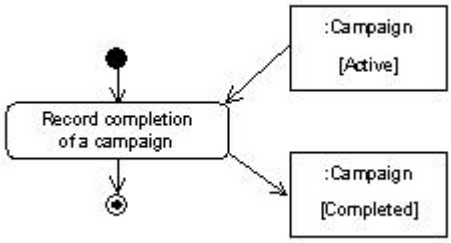
Question 15: A decision node in an activity diagram is represented by which of the following?

A. **A black circle in a white circle with a black border.**
B. **A diamond.**
C. **A rectangle.**

Question 16: Which of the following is shown by a statement in square brackets such as '[no staff to assign]' alongside a control flow?

A. **An activity.**
B. **An event.**
C. **A guard condition.**

Question 17: What is shown by the arrows from the rectangles in the following diagram?



A. **Object flows.**
B. **Data stores.**
C. **Classes.**

Question 18: Which of the following is the name given to the division of an activity diagram into columns that represent where activities take place?

A. **Tracks.**
B. **Activity zones.**
C. **Activity partitions.**

Question 19: How many phases are there in the Unified Software Development Process?

A. **Three.**
B. **Four.**
C. **Five.**

Question 20: Which of the following are the phases of the Unified Software Development Process?

A. **Inception, elaboration, implementation, test.**
B. **Analysis, design, implementation, test.**
C. **Inception, elaboration, construction, transition.**

Question 21: Which of the following is a definition of a workflow in the Unified Software Development Process?

A. **A series of activities to be carried out and the roles of the people who will carry out those activities.**
B. **A series of stages and the techniques that will be used in those stages.**
C. **A series of products and the roles of the people who will produce those products.**

MCQ

Module 3 – OOSAD using UML
Chapter 06: Requirements Capture

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following is not a reason for analysing the current system (if it exists)?

A. **The analyst needs to know about problems with and defects in the current system.**
B. **The analyst must not lose sight of his or her objectives.**
C. **Much of the functionality of the existing system will be required in the new system.**

Question 2: Which of the following is not an example of a functional requirement?

A. **The system must be capable of responding to all queries within 5 seconds.**
B. **Users of the system will make 50% fewer errors than with the existing system.**
C. **The system must allow users to enter details of advertising campaigns.**

Question 3: Which of the following describes a non-functional requirement?

A. **The system must be capable of holding 500Mb of data initially, growing by 100Mb per year.**
B. **The system must produce a report of all advertising campaigns for a particular client.**
C. **The system must allow users to enter details of clients.**

Question 4: Which of the following is not the kind of information gathered to understand usability requirements?

A. **The characteristics of the users of the system.**
B. **The context in which the system will be used.**
C. **The volume of data in the existing system.**

Question 5: Which of the following lists only contains systems analysis fact-finding techniques?

A. **Sampling, questionnaires, interviewing, reading and observation.**
B. **Use case modelling, interviewing, class diagramming, observation and knowledge acquisition.**
C. **Sampling, background reading, interviewing, use case modelling and activity diagramming.**

Question 6: Which fact-finding technique is most suitable to be used in the initial stages of fact-finding and particularly where the analyst is not familiar with the organization that is being studied?

A. **Background reading.**
B. **Interviewing.**
C. **Questionnaires.**

Question 7: Which of the following is a valid reason for using interviewing as a fact-finding technique?

A. **The interviewer can gather statistical data about documents.**
B. **The interviewer can respond flexibly to the interviewee's responses.**
C. **Interviews take very little time.**

Question 8: In which of the following circumstances is it not appropriate to use questionnaires?

A. **The views and knowledge of a large number of people must be obtained.**
B. **The people who work for the organization are geographically dispersed.**
C. **There is a need to check how people actually carry out their work.**

Question 9: Which of the following categories of people are not likely to be involved in a steering committee?

A. **Senior managers.**
B. **System testers.**
C. **Representatives of users.**

Question 10: Which of the following does the figure below show?

A. **An actor.**
B. **A use case**
C. **An activity**

Question 11: Which of the following does the figure below show?

A. **An actor.**
B. **A use case.**
C. **A user.**

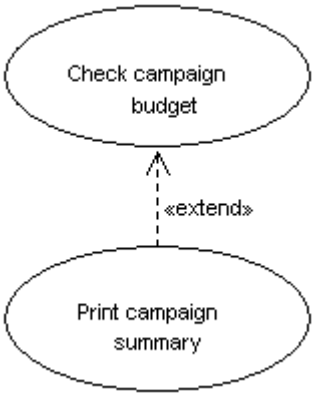
Question 12: Which of the following is not a purpose for using use cases?

A. **To document the scope of the system.**
B. **To provide a high-level view of system functionality from the users' perspective.**
C. **To describe the logic of operations.**

Question 13: Which of the following is the correct name for the symbols placed round stereotyped names such as «extend»?

A. **Guillemots.**
B. **Parakeets.**
C. **Guillemets.**

Question 14: Which of the following describes the figure below?



A. **Check campaign budget extends Print campaign summary.**
B. **Check campaign budget includes Print campaign summary.**
C. **Print campaign summary extends Check campaign budget.**

Question 15: Which of the following statements is true?

A. **Actors are linked to use cases by inheritance.**
B. **Actors are linked to use cases by communication associations.**
C. **Actors are linked to use cases by «uses» dependencies.**

Question 16: Which of the following is the best definition of an actor?

A. **An actor represents a user of the system.**
B. **An actor represents a role played by a user of the system.**
C. **An actor represents a role played by a user of the system or by an external system.**

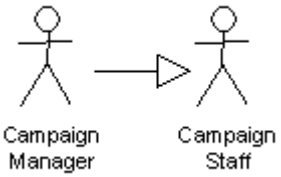
Question 17: Which of the following is true?

A. **An Extend relationship means that the functionality of one use case optionally extends the functionality of another at a particular point or points in its execution.**
B. **An Extend relationship means that the functionality of one use case always extends the functionality of another at a particular point or points in its execution.**
C. **An Extend relationship means that the functionality of one use case inherits the functionality of another at a particular point or points in its execution.**

Question 18: Which of the following is true?

A. **An Include dependency means that the functionality of one use case optionally includes the functionality of another at a particular point or points in its execution.**
B. **An Include dependency means that the functionality of one use case always includes the functionality of another at a particular point or points in its execution.**
C. **An Include dependency means that the functionality of one use case inherits the functionality of another at a particular point or points in its execution.**

Question 19: What is shown in the following diagram?



A. **A data flow from one actor to another.**
B. **An inheritance relationship between two actors.**
C. **An Extend dependency between two actors.**

Question 20: Which of the following is not a reason for using prototyping during use case development?

A. **To clarify requirements.**

B. To test the architecture of architecturally significant use cases.
C. To get the user interface development started before the class diagramming is begun.

[By showing users a prototype it is often possible to get further information from them about their requirements. They will react to a physical representation better than to a description.]

MCQ

Module 3 – OOSAD using UML
Chapter 07: Requirements Analysis

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following is not a good reason for constructing a requirements model?

A. It can show the business situation in enough detail to check that the requirements have been captured fully and correctly.
B. It can demonstrate that all the use cases have been drawn using the correct notation.
C. It can be organized in such a way that it will be useful later for designing the software.

Question 2: Which is the correct name for "a possible set of classes, together with an understanding of how those classes might interact to deliver the functionality of a use case"?

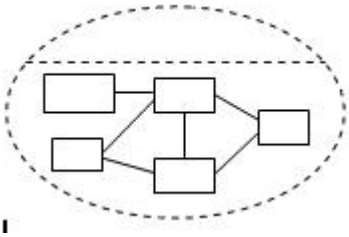
A. A use case class diagram.
B. A realization.
C. A collaboration.

Question 3: One of the following is not a difference between a class diagram and a communication diagram. Which one?

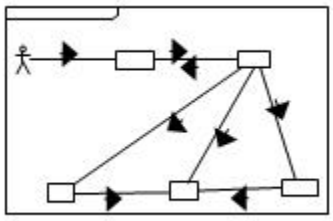
A. A communication diagram shows object interaction, while a class diagram ignores this.
B. A class diagram shows more of the structural details than the communication diagram.
C. A class diagram shows the names of the classes, while the communication ignores these.

Question 4: Which of these figures is a communication diagram?

A.



B.



C.

Question 5: Which of these is the correct set of USDP analysis class stereotypes?

A. Interface, control and entity.
B. Boundary, control and entity.
C. Interface, sequence and entity.

Question 6: One of the following is not an advantage of stereotyping analysis classes. Which one?

A. **The resulting packages can form a basis for the system's architecture.**
B. **It can be useful to differentiate classes that have broad similarities in the way that they behave.**
C. **Once a class is stereotyped, its behaviour is likely to become more predictable.**

Question 7: What do boundary classes represent?

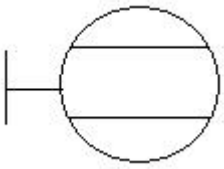
A. **Customers and suppliers of the business.**
B. **People who will use the system.**
C. **Interfaces between the system and its actors.**

Question 8: What is the significance of the double colon in the class name: User Interface::AddAdvertUI?

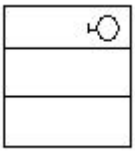
A. **The class called AddAdvertUI is in the package called User Interface.**
B. **User Interface is the stereotype of a class called AddAdvertUI.**
C. **User Interface and AddAdvertUI are two alternative names for the same class.**

Question 9: Which one of these is not a permitted symbol for a boundary class?

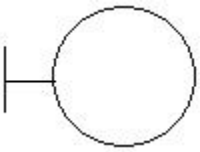
A.



B.



C.



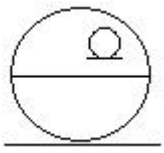
Question 10: What are entity classes?

A. **Classes that contain data.**
B. **Classes that contain persistent data.**
C. **Classes that represent something or some concept in the application domain.**

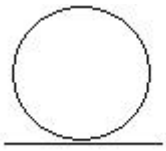
Question 11: One of these is not a permitted symbol for an entity class. Which one?

A.

B.



C.



Question 12: What do control classes represent?

A. **The calculation and scheduling aspects of the logic of the use case.**

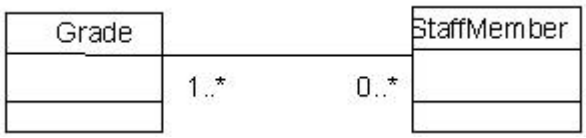
B. Classes that interact with the users of the system.
C. Classes that control the storage of persistent data.

Question 13: One of the following cannot directly affect the state of an object. Which one?
A. A change in the value of one of its attributes.
B. The creation or destruction of another object of the same class.
C. The creation or destruction of a link with another object.

Question 14: What is the difference between a link and an association?
A. A link connects two instances, while an association connects two classes.
B. A link is a transient association.
C. A link is an association between two entity classes.

Question 15: What is the significance of the multiplicity of an association?
A. It denotes the number of different classes that can be linked together.
B. It constrains the number of objects of one participating class that can be linked to an object of the other class.
C. It constrains the number of times that an object of one participating class can be linked during its lifetime.

Question 16: Which of the following answers is the correct interpretation of the association multiplicities shown on this diagram?



A. A staff member need not be associated with any grades, or it can be associated with an indeterminate number of grades; a grade must be associated with one or more staff members.
B. A grade cannot be associated with a staff member but a staff member can be associated with a grade.
C. A grade need not be associated with any staff members, or it can be associated with an indeterminate number of staff members; a staff member must be associated with one or more grades.

Question 17: How do operations differ from methods?
A. A method is a particular implementation of an operation.
B. An operation is a particular implementation of a method.
C. Some object-oriented programming languages have methods, while others have operations.

Question 18: When do we not need to represent the whole system as a class in the analysis model?
A. When the users have not stated that this is a requirement.
B. When the system does not need to interact directly with other systems.
C. When the system does not need to encapsulate data or behaviour that applies only to the system as a whole.

Question 19: What is a domain class model?
A. A class model that does not include either boundary or control classes.
B. An analysis class model that is independent of any particular use cases.
C. A class model that has been implemented in a particular domain.

Question 20: One of the following is a bad guideline for deciding the class where an operation should be located. Which one?
A. The operation represents a service that objects of that class should provide to objects of other classes.

B. The operation needs to access or update data that is stored in another class that has an association with that class.
C. The operation needs to access or update data that is stored in an attribute of that class.

Question 21: What is the main purpose of the Class–Responsibility–Collaboration technique?
A. To decide which team members will be responsible for developing each part of the software.
B. To decide which classes of the system should be responsible for each use case.
C. To decide how responsibilities should be distributed among the classes of the system.

Question 22: Why is it often difficult to determine the most appropriate choice of responsibilities for each class?
A. Because there may be several alternatives that appear equally justified.
B. Because the developers may not know enough about how the users want the system to be designed.
C. Because members of the development team are often lazy and avoid responsibility as much as they can.

Question 23: The requirements of different use cases may suggest different operations for the same class. How do we resolve this?
A. We should split the class so that there is one for each use case, and model each class with the particular operations required for its use case.
B. We should include in the class all the operations that are suggested by all the use cases.
C. We should model the class with only that subset of operations that applies to all use cases.

Question 24: Which of the following is an advantage of the use of a control class in realizing a use case?
A. A control class prevents users from being able to change the way that the entity classes work.
B. A control class reduces the need for entity classes to know anything about other entity classes unless this is directly relevant to their own responsibilities.
C. A control class allows the system to communicate with other systems on different networks.

MCQ

Module 3 – OOSAD using UML
Chapter 08: Refining Requirements Model

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following best describes the advantages of using software components, assuming that suitable components are available?
A. The users are more likely to get what they want.
B. The project is more likely to be completed in less time and at a lower cost.
C. The software is more likely to be capable of running on different hardware platforms.

Question 2: What is meant by the NIH syndrome?
A. Some software developers are not inclined to trust software that was written elsewhere.
B. Some project managers are not inclined to trust programmers who were trained elsewhere.
C. Many users are not inclined to trust software that was written elsewhere.

Question 3; One of the following is not a reason why object-oriented approaches support software reuse. Which one?
A. Object-oriented development encourages the encapsulation of the internal details of components.
B. Object-oriented models are organized in a way that makes it easier to find suitable components.

C. Object-oriented development encourages developers to share ideas with developers in other teams.

Question 4: Which of the following best describes composition?

A. A package of model elements.
B. A set of realizations for a single use case.
C. A relationship between a whole and its parts.

Question 5: Which of the following best describes how composition differs from aggregation?

A. A part cannot be removed from a composition, whereas a part can be removed from an aggregation.
B. A part can belong to only one composition, whereas a part can belong to more than one aggregation.
C. A part that belongs to a composition cannot have associations with any other classes, whereas a part that belongs to an aggregation can have associations with other classes.

Question 6: How does generalization increase the opportunities for software reuse?

A. A generalization hierarchy can be extended to include new subclasses with minimal effort.
B. Generalization aids the encapsulation of software components.
C. Generalization allows a group of software components to be treated as a single whole.

Question 7: What does it mean to say that an operation has been redefined?

A. The definition of the operation in a subclass overrides the superclass definition of the same operation.
B. The definition of the operation has been changed because users have changed their minds about the requirements.
C. The method that implements the operation does not follow the original definition of the operation.

Question 8: How do abstract and concrete classes differ from each other?

A. Abstract classes represent intangible concepts in the application domain, whereas concrete classes represent physical things.
B. Abstract classes are superclasses, whereas concrete classes are subclasses.
C. Abstract classes have no instances, whereas concrete classes have instances.

Question 9: Which of the following best describes multiple inheritance?

A. Multiple inheritance occurs when a subclass is removed from one generalization hierarchy and added to another.
B. Multiple inheritance occurs when a subclass inherits from more than one generalization hierarchy.
C. Multiple inheritance occurs when a subclass inherits characteristics from more than one level of superclass.

Question 10: Which of the following is the best description of a software development pattern?

A. The way that a particular software developer tends to solve problems.
B. The core of a solution to a software development problem that occurs over and over again.
C. A particular approach to software development, such as the object-oriented approach or the structured approach.

Question 11: What is the role of encapsulation in reuse?

A. Encapsulation means that it is not necessary for other developers to know how a software component works internally.
B. Encapsulation means that software components can work more efficiently.
C. Encapsulation means that there is no need for software developers to document their work.

Question 12: How does composition support software reuse?

A. **A composite structure is capable of performing more than one task, and thus it is useful in more than one context.**
B. **Composition structures are easy to extend with minimal effort.**
C. **Composite structures encapsulate their sub-components, making it easy to treat the composite as a single whole.**

MCQ

Module 3 – OOSAD using UML
Chapter 09: Object Interaction

[The correct answer for each question is indicated by BOLD FACE]

Question 1: Which of the following is true?

A. **Identifying what messages are passed between objects is a straightforward process.**
B. **Message passing is a metaphor used to describe object interaction.**
C. **Message passing is only concerned with query operations.**

Question 2: Which of the following is true about boundary objects?

A. **The identification and specification of boundary objects is purely a design activity.**
B. **The identification and detailed specification of boundary objects is part of requirements specification.**
C. **The identification and specification of boundary objects is considered in both analysis and design but in different ways.**

Question 3: What is meant by the term collaboration in context of interaction modelling?

A. **A collaboration describes the messages between objects.**
B. **A collaboration describes objects that share functionality.**
C. **A collaboration describes the structure and links between a group of instances playing roles in a behaviour.**

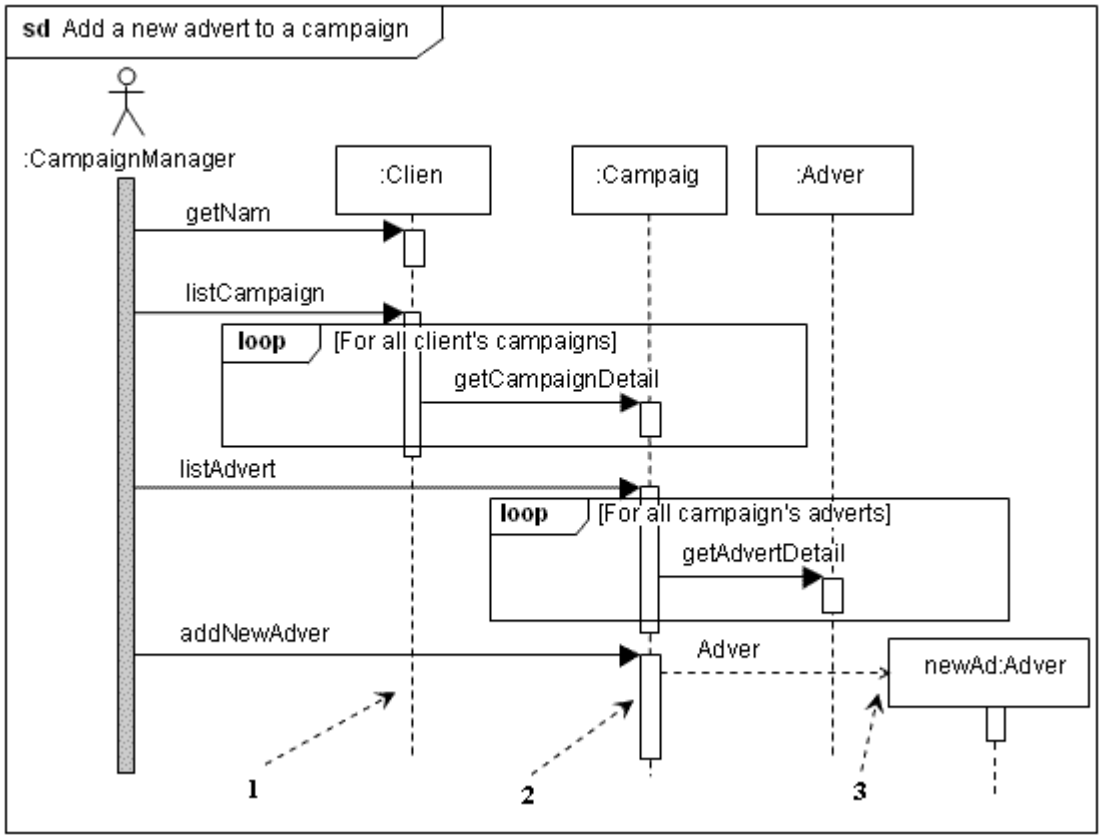
Question 4: What is meant by the term interaction?

A. **An interaction describes any communication between two lifelines.**
B. **An interaction describes a group of lifelines that share functionality.**
C. **An interaction defines the message passing between lifelines (e.g. objects) within the context of a collaboration to achieve a particular behaviour.**

Question 5: An interaction sequence diagram drawn during analysis differs from one drawn during design in which of the following ways?

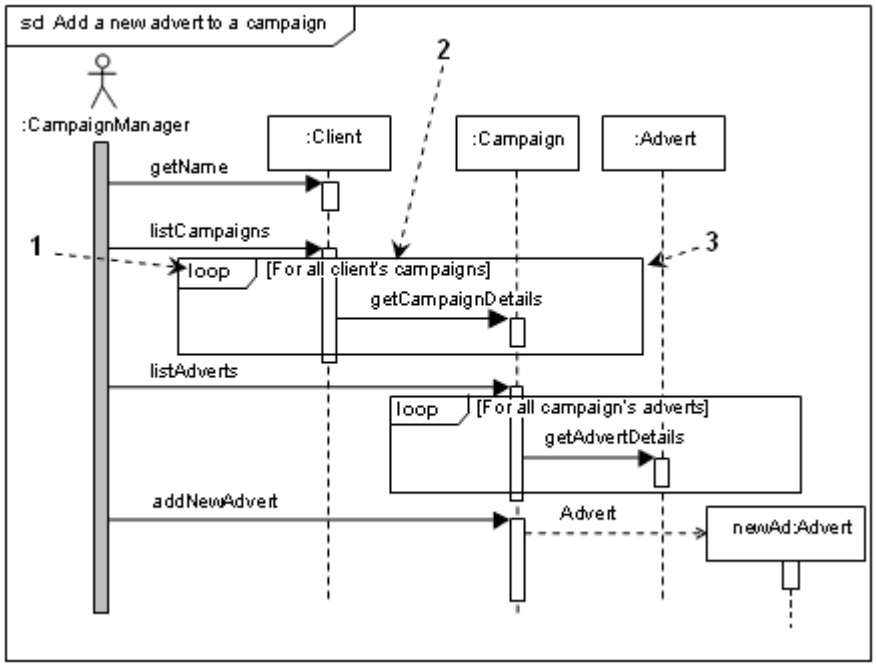
A. **The former normally does not include design objects or detailed specifications of message signatures.**
B. **The former normally does not include boundary objects.**
C. **The former normally does not include control objects.**

Question 6: On the following figure which of the symbols labelled 1, 2 or 3 represents an activation on a sequence diagram?



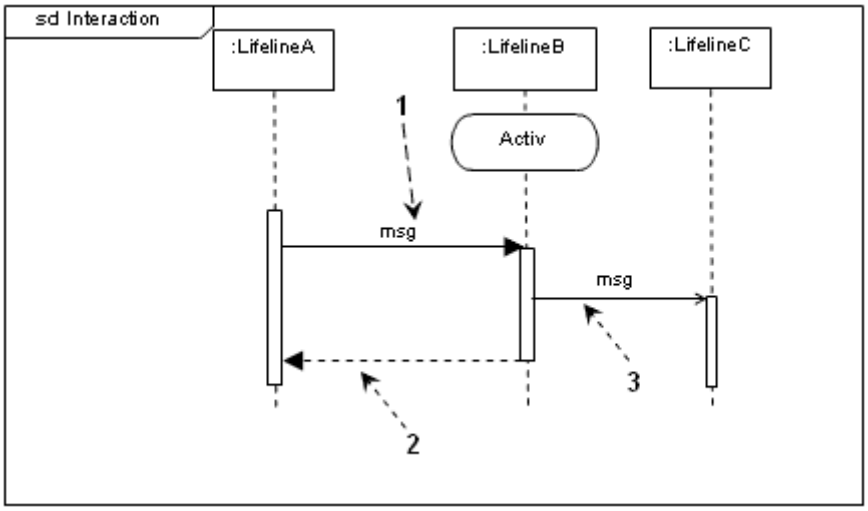
A. Symbol 1
B. Symbol 2
C. Symbol 3

Question 7: Which of the arrows labelled 1, 2 or 3 is pointing to an interaction constraint?



A. Arrow 1
B. Arrow 2
C. Arrow 3

Question 8: Which of the labelled symbols in the following diagram represents a synchronous message?



- **A. Symbol 1**
- **B. Symbol 2**
- **C. Symbol 3**

Question 9: What is meant by the term 'thread of control' in the context of concurrent behaviour?

- **A. A thread of control is a weak part of the control system.**
- **B. A thread of control is the mechanism that controls concurrent behaviour.**
- **C. A thread of control is an execution pathway that may occur simultaneously with other execution pathways.**

Question 10: Which of the following statements about sequence diagrams is true?

- **A. A sequence diagram containing an interaction fragment may be referenced by only one sequence diagram.**
- **B. A sequence diagram containing an interaction fragment may be referenced by one or more sequence diagrams.**
- **C. A sequence diagram containing an interaction fragment may never be referenced by another sequence diagram.**

Question 11: Which of the following is an appropriate way of hiding complex behaviour in an interaction sequence diagram?

- **A. A group of objects and their interactions can be represented by a single lifeline which references an interaction fragment.**
- **B. Some messages are omitted to reduce the complexity.**
- **C. Some objects are omitted from the diagram to reduce the complexity.**

Question 12: Which of the following is an appropriate way of modelling a part of an interaction that appears in several other interactions?

- **A. Model the common part of the interaction as an 'alt' combined fragment.**
- **B. Model the common part of the interaction using a communication diagram.**
- **C. Model the common part of the interaction as an interaction fragment in a separate sequence diagram.**

Question 13: Interaction sequence diagrams should be consistent with other diagrams and models that relate to the same group of objects or subsystems. Which of the following statements is true?

- **A. A sequence diagram must show all the messages that are consistent with the state machines for each of the lifelines in the sequence diagram and be consistent with the class diagram.**
- **B. A sequence diagram must be consistent with the class diagram or with the state machines for lifelines in the sequence diagram.**
- **C. A sequence diagram must be consistent all other diagrams or models that include or relate to the lifelines in the sequence diagram.**

Question 14: Which of the following accurately describes an asynchronous message?

A. **An asynchronous message does not cause the invoking operation to halt execution while it awaits the return of control.**
B. **An asynchronous message has the same effect as a blocking call.**
C. **An asynchronous message is a reply to a synchronous message.**

Question 15: Communication diagrams differ from interaction sequence diagrams in the following way?

A. **Communication diagrams cannot show the design detail that can be shown on a sequence diagram.**
B. **Communication diagrams only show the collaboration and not the sequence of the messages.**
C. **Communication diagrams show the links between the objects.**

Question 16: In a communication diagram one message has the sequence number 5.1.1. Which of the following sequence numbers indicates the message that must be the immediate successor?

A. **A message with the sequence number 5.1.2.**
B. **A message with the sequence number 5.1.1.1.**
C. **A message with the sequence number 5.2.1.**

Question 17: Which of the following is a disadvantage of communication diagrams?

A. **A communication diagram can only be used during analysis.**
B. **A communication diagram cannot include guard conditions.**
C. **A communication diagram is difficult to read if there are many messages between two objects.**

Question 18: An interaction diagram should be consistent with the associated class diagram in various ways. Which of the following statements is true?

A. **It is always correct to show a message between two objects if there is an association between their classes.**
B. **The sending object must have the object reference of the receiving object before sending a message to that object.**
C. **A message should not be shown between two objects if there is no association between their classes.**

Question 19: Which of the following statements is correct about interaction overview diagrams?

A. **An interaction overview diagram may not have decision nodes.**
B. **An interaction overview diagram may only have interaction occurrences, initial pseudostates and final pseudostates as nodes in the diagram.**
C. **An interaction overview diagram may include in-line sequence diagrams.**

Question 20: Timing diagrams are used to show how timing constraints affect interactions between lifelines. Which of the following statements is true?

A. **A lifeline may only have two alternative states.**
B. **When a state change is being modelled that takes significant (from the application's perspective) time it is shown by a slanting line.**
C. **Messages are not shown on timing diagrams.**

MCQ

Module 3 – OOSAD using UML
Chapter 10: Specifying Operations

[The correct answer for each question is indicated by BOLD FACE]

Question 1: What is the advantage of defining an operation in the form of a contract?

A. **A contract cannot be broken and thus the software will be more reliable in operation.**

B. A contract encourages encapsulation by concentrating on the service that an object will provide to other objects and by ignoring the way that the service is to be achieved.

C. A contract encourages better design and testing by specifying exactly how an object will achieve a service that it is to provide to other objects.

Question 2: One of the following would not normally be included in a contract. Which one?

A. The operation signature.

B. Events that the operation will transmit to other objects.

C. The object identifiers of other objects to which events will be transmitted.

Question 3: How does an algorithmic technique differ from a non-algorithmic technique?

A. Algorithmic techniques describe the internal logic of an operation, while non-algorithmic techniques do not.

B. Algorithmic techniques describe only the external interface of an operation, whereas non-algorithmic techniques also describe the internal details.

C. Algorithmic techniques are used to describe algorithmically complex operations, while non-algorithmic techniques are used to describe only simple operations.

Question 4: Only one of the following is an algorithmic technique. Which one is it?

A. Decision table.

B. Activity diagram.

C. Pre- and post-condition pair.

Question 5: Only one of the following is a non-algorithmic technique. Which one is it?

A. Activity diagram.

B. Structured English.

C. Decision table.

Question 6: One of the following is not a control structure in Structured English. Which one?

A. GoTo.

B. Iteration.

C. Selection.

Question 7: How does pseudo-code differ from Structured English?

A. The syntax and vocabulary of Structured English resemble those of a specific programming language, while pseudo-code is language-neutral.

B. The syntax and vocabulary of pseudo-code resemble those of a specific programming language, while Structured English is language-neutral.

C. Pseudo-code is useful only for procedural programming languages, such as C, while Structured

Question 8: Which is the best description of the meaning of the following example of Structured English?

A. Get all the advert costs and apply the overhead rate to each in turn, then work out the total cost of the campaign by adding these together, compare to the campaign budget and produce a warning if the budget has been exceeded.

B. For each advert in turn, get the cost, apply the overhead rate, compare to the budget and produce a warning if the budget has been exceeded, then do the same for the next advert.

C. Work out the total cost of the campaign by accumulating the cost of each advert in turn, apply the overhead rate to the total, compare this to the campaign budget and produce a warning if the budget has been exceeded.

Question 9: Which of the following best describes the main use of OCL?

A. OCL is used to describe in more detail the interaction between objects than is shown graphically in an interaction sequence diagram.

B. OCL is used specifically to document operation specifications.

C. OCL is used to give precise definition to any constraints in a UML model that cannot be expressed clearly and unambiguously in a graphical notation.

Question 10: What do OCL statements generally contain?

A. A context, a property of the context and an operation on that property.
B. Sequence, selection and iteration structures.
C. Operation intent, operation signature and logic description.