

**AK-124****April-2015****B.C.A., Sem.-IV****CC-211 : Object Oriented Analysis & Design (OOAD)****Time : 3 Hours]****[Max. Marks : 70**

1. (A) Explain Spiral Model with diagram, advantages and disadvantages. 7

**OR**

Explain Feasibility Study with all types.

- (B) Draw the context and first level diagram for case given below : 7

Online mail order catalogue system allows people to shop from home. When a customer receives the catalogue and wants to buy something, they can telephone, fax or email their order to the company. The company gets the order and sends the goods and an invoice. When the customer receives the goods with a delivery note, they send payment and receive a receipt for their payment.

**OR**

Draw the context and first level diagram for case given below :

Develop a Library Management System. In the system student, faculty can issue and return book. When there is a request for any book the librarian checks for book availability and if the book is available, it is issued otherwise it should produce a non-availability message.

2. (A) Explain the purpose of UML. 7

**OR**

Explain all the Pillars of Object-Oriented Analysis and Design.

- (B) (1) Explain Generalization and Specialization. 7  
(2) Explain Abstraction and Encapsulation.

**OR**

- (1) Explain Inheritance and Polymorphism.  
(2) Explain Links and Association.

3. (A) (1) Explain Elements of Class Diagram.  
(2) Explain Elements for design of Use-Case Diagram.

OR

Draw a Use Case Diagram for the case given below.

A Car Rental company wants to develop an automated system that would handle car reservations, customer billing, and car auctions. Usually a customer reserves a car, picks it up, and then returns it after a certain period of time. At the time of pick up, the customer has the option to buy or waive collision insurance on the car. When the car is returned, the customer receives a bill and pays the specified amount. In addition to renting out cars, every six months or so, the auto rental company auctions the cars that have accumulated over 20,000 miles. Draw a usecase diagram for capturing the requirements of the system to be developed.

- (B) Draw the Class Diagram for case given below :

A bank system contains data on customers (identified by name and address) and their accounts. Each account has a balance and there are 2 type of accounts : one for savings, which offers an interest rate, the other for investments, used to buy stocks. Stocks are bought at a certain quantity for a certain price (ticker) and the bank applies commission on stock orders.

OR

Draw the Object Diagram for case given below.

We want to model a system for management of flights and pilots. An airline operates flights. Each airline has an ID. Each flight has an ID a departure airport and an arrival airport : an airport as a unique identifier. Each flight has a pilot and a co-pilot, and it uses an aircraft of a certain type; a flight has also a departure time and an arrival time.

An airline owns a set of aircrafts of different types. An aircraft can be in a working state or it can be under repair. In a particular moment an aircraft can be landed or airborne.

4. (A) Draw a collaboration diagram for :

ABC Cloth Company has very well established business in Udepur which selling men's and women's garments. A customer can register online so that he/she can check the status of the placed order. A customer can purchase any Cloth item online either by using his/her existing account or as an anonymous user specifying shipping address and contact information. The customer can only check the status of his/her order if he/she creates an account. The customer will pay online through credit or debit card and order will be delivered on the shipping address within the week.

OR

Draw a sequence diagram for :

Adding a picture to Facebook. Login, create album, upload a picture, Audio, Video etc... Think about the software modules that would be involved - UserAccount, Album, FriendList, Recent Activities etc...

(B) Draw an Activity Diagram for FVM : Electronic Voting Machine.

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Once arrived at the polling station, elector gives the own electoral card to station president who checks if the polling station number is right. Then he checks the identity document and if ok he gives the ballot paper to the elector. Then the president waits for a cabin to get free and he gives the pencil to the elector and a secretary who signs the registry and put a print on the elector certificate. Once elector has voted, he/she inserts the ballot paper in the urn, giving back the pencil and taking back the own ID document.

OR

Explain the use of State Chart Diagram along with different states available in state chart diagram.

Answer the following :

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- (1) The incremental model is an intuitive approach to the \_\_\_\_\_ model.
  - (a) Incremental
  - (b) Waterfall
  - (c) Spiral
  - (d) SDLC
- (2) \_\_\_\_\_ means putting together the things that should be together, in particular attributes and operations.
  - (a) Cohesion
  - (b) Coupling
  - (c) Polymorphism
  - (d) Encapsulation
- (3) A \_\_\_\_\_ is an evaluation and analysis of the potential of the processed project which is based on extensive investigation and research to give full comfort to the decisions makers.
  - (a) Feasibility Study
  - (b) Deployment
  - (c) Implementation
  - (d) Requirement Modeling
- (4) A \_\_\_\_\_ is a collection of data about the data in which each and every data element, data structure, and data transform is rigorously defined.
  - (a) Data Flow Diagram
  - (b) System Analysis
  - (c) Data Dictionary
  - (d) Questionnaire
- (5) A \_\_\_\_\_ defines the scope of the system in usecase diagram.
  - (a) Actor
  - (b) Usecase
  - (c) System Boundary
  - (d) Relationship



- (6) \_\_\_\_\_ are the basic means used for establishing relationship among objects and classes of the system.
- (a) Links and Association (b) Object  
(c) Interface (d) Multiplicity
- (7) \_\_\_\_\_ divide activity diagram in to sections.
- (a) Objects (b) Actors  
(c) Swimlances (d) Fork and Join
- (8) A \_\_\_\_\_ relationship is a parent child relationship between usecases.
- (a) Generalization (b) Aggregation  
(c) Composition (d) Multiplicity
- (9) Scope of usecase diagram is to capture the static aspect of a system.  
[True / False]
- (10) Processes or data stores can be shown in Context Level DFD.  
[True / False]
- (11) Activity Diagram is used to model the lifeline of an object.  
[True / False]
- (12) External Entities are those things that are identified as needing to interact with the system. [True / False]
- (13) State Chart Diagrams are sometimes called event diagrams, event scenarios, and timing scenarios. [True / False]
- (14) Sequence diagrams are useful in understanding Class Diagrams.  
[True / False]