Object-oriented Analysis & Design (Fall 2012)

Total Marks : 50 **Time: 3 hrs**

Consider the following system description:

ABC Service delivers drinking water and periodicals to customers. The company sells different brands of water: Nestle, Aqua and Sufi, etc. And it sells two types of periodicals: newpapers and magazines. The newspapers include Dawn, Jang and Nation, etc., while magazines include Herald and Akhbar-e-Jahan, etc.

Customers can request to subscribe/unsubscribe the service by using an online system (website). An administrator approves/disapproves these requests by considering different parameters such as location/area.

A customer can search and subscribe to one or more products, and can specify the quantity required, for example 2.5 litre of water, or 2 copies of a particular newspaper, etc. He also specifies the duration of subscription. At the time of subscription, customer shall be shown subscription amount (total as well as item-wise details). Customers can also see their subscription history.

Company also provides some bundled subscription deals, which offer a discount as well. For example, Dawn and Herald can be bundled into a deal. There is no restriction on the type and number of items that can be bundled. The subscription amount of a bundle is the sum of amount of all items that are part of bundle minus the discount.

Every product has some associated attributes: for example a newspaper has its editor, number of pages, etc. Water has its nutrients, expiry date, etc. The customer may like to view such details for any product.

The system does not handle payments: neither it provides online payment facility nor it records any monetary transactions.

Answer the following:

1. Give a use case diagram for the system. **(10 marks)**
2. Give a detailed class diagram showing important attributes, methods and relationships. **(20 marks)**
3. Give a use case description for the following use case: "Place a request for subscription". Your description should be precise and concise. **(10 marks)**
4. Give a sequence diagram to show how the above use case will be implemented using your proposed design . **(10 marks)**