AQ-115

April-2017

BCA., Sem.-IV

CC-211 : Object Oriented Analysis and Design

Time : 3 Hours] [Max. Marks : 70

1. (A) Answer the following : 8

(1) Explain fact finding techniques in brief.

(2) Explain spiral model with diagram.

OR

Answer the following :

(1) Explain feasibility study in brief.

(2) Explain incremental model with diagram.

(B) Draw context level diagram and data flow diagram for online ordering system : The customers select the products from the displayed according to the categories which are managed by the admin. When customers place orders on the company's web site, the system checks to see if the items are in stock. The customer manages the cart and finally checks out. The customer has to login or register to the system, after that he proceeds for payment. The customer receives the invoice from the employee for the goods purchased. The payment is received by the employee and the goods are shipped to the customer. 6

OR

Draw context level diagram and data flow diagram for the following :

Draw a DFD for a publisher who publishes different books. An author can write different books but for the same publisher. A contract is signed between publisher and the author. Reports such as the number of books sold, number of complementary copies given, royalty amount paid to the author are generated from the system.

2. (A) Explain any four pillars of object oriented analysis and design. 8

OR

Explain Generalization and Specialization, Aggregation and Composition

(B) Explain object oriented approaches in brief. 6

OR

Explain Unified Modelling Language

(A) Answer the following : 8

(1) Draw a use Case diagram for a National Bank :

The Customers can open an online account in any branch of the bank. The customers can do various transactions on their account such as debiting, crediting, depositing or withdrawing cash or by Cheque, operate lockers and manage the account and check the balance. Bank calculates interest from time to time and the head office requires management reports from the branches. The management of the branch requires different reports of the operations.

(2) Explain aggregation in class diagram.

OR

Answer the following :

(1) Draw use Case diagram for Student taking admission in college. A student contacts a college for admission. He/she submits his/her details in the college form. The college office person verifies the student details. The management takes the decision (admission granted or rejected) and conveys the status to the student.

(2) Explain generalization in class diagram with example.

(B) Draw a UML Class Diagram representing the following elements from the problem domain for a hockey league. A hockey league is made up of hockey teams. Each hockey team is composed of players, and one player captains the team. A team has attributes of a name and a record. Players have attributes like number and a position. Hockey teams play games against each other. Each game has attributes like score and a location. Teams are lead by a coach. A coach has attributes like level of accreditation and a number of years of experience, and can coach multiple teams. Coaches and players are people, and people have attributes like names and addresses. 6

OR

Draw an object diagram for the following :

The car rental agency has multiple branches. The customer visits the agency for inquiry and selects a car by signing the car rental application form. The agency checks for the availability of the car and give the status to the customer. The customer can rent multiple vehicles. The billing is done on the type of vehicle and the distance travelled for each vehicle rented by the customer.

4. (A) Answer the following: ... 8

(1) Explain elements of state chart diagram and their notations.

(2) Draw a sequence diagram for customers placing the orders. The customer will fill the order form and the order details are received by the order controller to validate the order details and store the details in the order database. Check for valid and invalid order.

OR

Answer the following :

(1) Explain sequence diagram.

(2) Draw the State Chart Diagram for capturing the state transitions in an ATM machine. The card is inserted into the machine to activate it. The pin number is verified for the access to the transactions. The desired transactions is opted and on completion the card is removed.

(B) Answer the following : 6

(1) Draw an activity diagram for an Admission system.

Gujarat University declares the date of entrance examination. The student has to apply for the entrance examination. Results are declared by Gujarat University. The student has to fill up option form to select the college of his/her choice. Gujarat University displays the allotment list in the website and intimation is sent to the colleges. Students should report the allotted colleges and complete the admission procedure.

(2) Explain the elements of collaboration diagram with example.

OR

Answer the following :

(1) Draw a collaboration diagram for a registration of student applying for a loan. The student or loan officer fills the registration form. The details are received and validated by Registration controller and the user is informed about his registration.

(2) Explain the terms synchronization, fork, joins and swim lanes.

5. Answer the following : 14

(1) _____ is a process of gathering and interpreting facts, diagnosing problems and using information for improving the system.

(a) System analysis (b) System design

(c) System analysis and design (d) System development

(2) The _____ model is appropriate when it is too risky to develop the whole system at once.

(a) Waterfall (b) Spiral

(c) Hierarchical (d) Incremental

(3) A _____ is a relationship among instance of classes.
(a) Link
(b) Line
(c) Attribute
(d) Label

(4) Use case description contents includes
(a) Stakeholders
(b) Actors
(c) Use case Name
(d) All the above

(5) Which of these diagrams shows interaction between objects ?
(a) Activity diagram
(b) Sequence diagram
(c) Class diagram
(d) Component diagram

(6) _____ diagram is also called communication diagram.
(a) Activity diagram
(b) Sequence diagram
(c) Collaboration diagram
(d) Component diagram

(7) _____ diagram is an interaction diagram that emphasize time ordering of messages.
(a) Activity diagram
(b) Sequence diagram
(c) Class diagram
(d) Component diagram

(8) _____ diagram show workflow of entire system.
(a) Activity diagram
(b) Sequence diagram
(c) Class diagram
(d) Component diagram

(9) Which of the following is not a guideline form DFD ?
(a) Develop a context level diagram
(b) Sub divide the DFD
(c) Identify system boundaries
(d) Display the physical location of data files

(10) _____ divide activity diagram into sections.
(a) Fork
(b) Join
(c) Swim lanes
(d) Activity

(11) A DFD shows how the system transforms input data into useful information. (true/false)

(12) An Aggregation relationship is a parent child relationship between use cases. (true/false)

(13) The purpose of class diagram is to show the static structure of the system being modelled. (true/false)

(14) Uni-directional association means both classes are aware of each other and their relationship. (true/false)