



XZ-140

April-2013

B.C.A. (Sem.-IV)

CC-211 : Object Oriented Analysis and Design

Time : 3 Hours]

[Max. Marks : 70

- Instructions:** (1) Figures to the right indicate full marks.
(2) Make and state any necessary assumptions.
(3) Draw diagrams wherever necessary.

1. (a) Answer the following questions :

- (1) Define Fact-Finding. Explain Questionnaires and Surveys method in detail **4**
(2) Explain Waterfall Model in detail with diagram. **3**

OR

Answer the following questions :

- (1) Explain in detail the interviewing method of fact-finding and give its advantages. **4**
(2) Explain Incremental Model in detail with diagram. **3**

(b) Answer the following questions :

- (1) Draw the context level DFD for a Library Management System. In the system, student and faculty can issue a book and return the book. When there is request for any book the librarian checks for book availability and if the book is available, it is issued else a non-availability message is issued. **4**
(2) Explain the significance of Operational and Technical Feasibility in Software Development Process. **3**

OR

Answer the following questions :

- (1) Draw context level DFD for online ordering system. The customer search for products on the company's website. When customers place orders on the company's web site, the system checks to see if the items are in stock. The system's admin sends a confirmation message to the customer, and generates a shipping order to the warehouse. When the order is shipped, the customer is billed against which the customer does payment. **4**
(2) Explain the significance of Economic and Schedule Feasibility in Software Development Process. **3**

2. (a) What is Object Oriented Analysis and Object Oriented Design ? 7
- OR**
- What is Unified Modeling Language ? Explain its role in OOAD.
- (b) Answer the following questions :
- (1) Explain Inheritance and Polymorphism with example. 4
- (2) Give difference between Abstraction and Encapsulation. 3
- OR**
- Answer the following questions :
- (1) Explain Cohesion and Coupling with example. 4
- (2) Give difference between Specialization and Generalization. 3
3. (a) Explain the use of <<includes>> and <<extends>> relationships of Use-Case Diagrams. Draw Use-Case diagram for student taking admission in college. 7
- 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.
- OR**
- What are Use-Case Diagrams ? Give the advantages of using Use-Case Diagrams. Draw the Use-Case Diagram for Appointment system for doctor's office. A patient came to office, the receptionist get patient details. If the patient is new, the receptionist creates new patient record. The receptionist display list of possible appointments to patient. The patient choose from the list of new appointments, modify appointments or cancel his appointments. The patient makes payment.
- (b) Answer the following questions :
- (1) Draw a class diagram for an Information Modeling System for a College. In a college there are one or more courses. Each course offers one or more subjects to the students. A particular subject will be offered by only one Course. Each Course has instructors and instructors can work for one or more Course. Student can enroll in upto 5 subjects in a College. Instructors can teach upto 3 subjects. The same subject can be taught by different instructors. 4
- (2) Give difference between Class Diagram and Object Diagram with example. 3
- OR**
- Answer the following questions :
- (1) Draw the object diagram for car rental application.
- 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
- (2) Explain Aggregation and Association relationships in Class diagram. 3

4. (a) Answer the following questions :
- (1) What is Sequence Diagram ? Explain how the objects of Sequence Diagram interact with other. 4
 - (2) Draw Collaboration Diagram for the following Login Use-Case. 3
There is an Online Shopping Website. The customer can register online so that he/she can place an order online. The customer can also login so that he/she can check the status of the placed order. When the customer enters login details, the security manager validates the details and if they are correct the customer is allowed access to his order details.

OR

Answer the following questions :

- (1) Explain the elements and objects of the Collaboration Diagram. Give the guidelines for design of collaboration diagram. 4
 - (2) Draw the sequence diagram for the following Apply for loan Use-Case. 3
There is nationalized bank which is offering education loan to the students. All the students who want the loan have to fill the loan application form. The form is submitted to the application controller. The loan officer will verify the application by checking the application details. If the details are correct the loan officer will send confirmation message and update the database for loans else send a rejection message to the applicant.
- (b) Answer the following questions :
- (1) Draw Activity diagram for the above MCA admission procedure. 4
MCA admissions are done through an entrance test conducted by All India Council for Technical Education. AICTE gives advertisement for the entrance exam. Students apply for the exam. Students who pass the exam have to fill the form and give their college preference. The final allotment list is displayed on the AICTE website and it is also intimated to the colleges. Students have to report to their allotted colleges and complete the admission process.
 - (2) What is the use of Statechart Diagram ? Explain different states of a Statechart diagram in detail. 3

OR

Answer the following questions :

- (1) Draw the Statechart 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. 4
- (2) Explain the use of Activity Diagram. Explain 'fork' and 'join' flow of activity with example. 3

5. Do as directed :

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- (1) List all phases of Spiral Model.
- (2) When every phase “pour’s over” into the next phase, it is known as _____.
- (3) _____ uses various symbols to show how the system transforms input data into useful information.
- (4) A _____ is the central storehouse of information about the system’s data.
- (5) A data flow diagram (DFD) shows how the system transforms input data into useful information. (true/false)
- (6) It should be avoided to have more than five swimlanes in a single activity diagram. (true/false)
- (7) What are the benefits of Document Review ?
- (8) What is the use of System Sequence Diagram ?
- (9) How will you identify the actors in the system ?
- (10) Which of the following techniques is most appropriate for gathering information from a Company’s Director ?
 - (a) Observation
 - (b) Interview
 - (c) Survey
 - (d) Brainstorming session
- (11) Which of these diagrams shows interactions between objects ?
 - (a) Activity diagram
 - (b) Class diagram
 - (c) Sequence diagram
 - (d) Component diagram
- (12) Which of the following diagrams is not a part of UML (not used for object oriented analysis and design).
 - (a) Sequence diagram
 - (b) Structure chart
 - (c) Class diagram
 - (d) Activity diagram
- (13) Which of the following UML diagrams is used to show the flow of activities within a use case ?
 - (a) Sequence diagram
 - (b) Use-case diagram
 - (c) Class diagram
 - (d) Activity diagram
- (14) _____ shows all the major high-level processes of the system and how they are integrated, as well as data stores, external entities and data flows among them.
 - (a) Context DFD
 - (b) Level-0 DFD
 - (c) Level-1 DFD
 - (d) Level-2 DFD