

Structured System Analysis and  
Design(SSAD) Object Oriented  
Anaylsis and Design(OOAD)  
Software Testing

2008 October

Science Computer Science

TYBSc

University of Mumbai

(3 Hours)

[Total Marks : 100  
23rd Oct 2008]

- N.B. :**
- (1) All questions are compulsory.
  - (2) Figures to the right indicate marks.
  - (3) Answers to two sections must be written and submitted separately and mixing of subsections is not allowed.
  - (4) Symbols have their usual meaning unless otherwise stated.
  - (5) Illustrations, in-depth answers and diagrams will be appreciated.

**Section I**

1. a) List the problems faced in the Waterfall Model. Give any two points when this model should be used. (7)
- b) Explain the activities of Spiral Model. (5)
- c) State & explain five activities involved in the Planning Phase of SDLC. (5)

OR

1. p) List the weaknesses of Structured Approach. Mention and explain two main principles of Structured Design. (7)
- q) Explain five issues considered in Operational Feasibility. (5)
- r) State and explain activities involved in Implementation Phase of SDLC. (5)

2. a) Case Study : (7)  
ACME Solutions is a firm providing solutions to all sorts of problems relating to computers. A Client approaching the firm with a problem fills up a Problem sheet to mention the complete details of the problems in the computer. A computer can have one or more problems. The sheet is handed to the a Computer Engineer by the office Clerk. The Engineer visits the Clients site and solves the problem and fills up a Solution sheet mentioning the work done on the computer. The Solution sheet along with the Problem sheet is handed over to the Clerk by the Engineer. The Clerk prepares the bill depending upon on the details mentioned in the Solution sheet. The bill is sent to the Client for receiving payment. Draw a neat Context DFD on the basis of an Event Table drawn for the above case.
- b) What is Work Sampling? Mention four advantages of using Observation of Work Environment as Fact Finding technique. (5)
- c) Mention 2 simple rules to avoid Information Overloading when constructing DFD. (5)

OR

2. p) Case Study : (7)  
Black Hawk is a security firm providing security systems. The firm provides security system in three categories (A – range Rs. 1000 – Rs. 3000), (B – range > Rs. 3000 – Rs. 7500) and (C – range > Rs. 7500). Discount is unavailable for all categories if the customer purchases a single security system. However for the purchase of more than 1 piece for category A 30% discount, for category B 20% discount and category C 7% discount is given on the total bill amount. Draw Decision Tree and write statements in Structured English for the above case.
- q) What is a Temporal Event? How can Temporal Events be identified? Give two examples of Temporal Event. (5)
- r) What is Black Hole? Explain with proper example. (5)

3. a) List, draw and explain any 6 symbols used for drawing Structure Chart. (6)  
 b) State some rules used to reduce errors in data input. (5)  
 c) What is a Foreign Key? How is automatic Referential Integrity implemented by DBMS? (5)

OR

3. p) List 3 objectives of Integrity controls. List the 3 category of users to develop access controls. (6)  
 q) What is an Automation System Boundary? What is the System Flow Chart used for? Draw System Flow Chart symbols to represent – File or Database and Manual Operation. (5)  
 r) What is meant by Visibility in terms of Interface Design? Explain the following golden rules proposed by Ben Schneiderman. (5)  
 1. Offer Informative Feedback.  
 2. Support Internal Locus of control.

## Section II

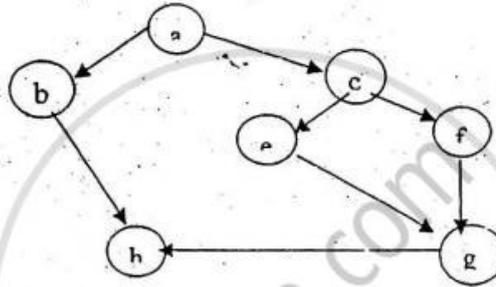
4. a) Garfield's Pizza is a pizza making company. It makes the most delicious types of pizzas. It has on its menu twenty types of pizzas each in Vegetarian, Non-Vegetarian and Jain category. The company records the details of the customer (name, address, telephone / mobile no). The general details of the order (order no. date, time) are also recorded. The order can be of the following special types – On Table (Table No, KOT No) or Take Away (Token No, Time of Take Away) or Home Delivery ( Carry-boy name, time of delivery). Further details of the pizza ordered for each type of order are also recorded (pizza type, quantity, size). Draw a neat Class Diagram indicating cardinality. Also show the various OO concepts wherever possible. (7)  
 b) What is Concurrent Behavior? Explain AND and OR conditions with proper diagram. (5)  
 c) Write note on Deployment Diagram. (5)

OR

4. p) What are Transient Objects and Persistent Objects? Explain Many-To-Many relationship through proper example with diagram and ODL statements. (7)  
 q) What is meant by the term Transition in OO context? Explain Transition label with proper example and diagram. (5)  
 r) What is Component diagram used for? Draw and explain the symbols used to represent a component in a Component diagram. Explain Component Dependency. (5)
5. a) Explain seven characteristics of a Testable Software. (7)  
 b) List the activities involved during Smoke Testing. Explain the following two benefits of Smoke testing – (5)  
 1. Quality of end product is improved.  
 2. Progress is easier to assess.  
 c) Write note on Recovery Testing. (5)

OR

5. p) What is meant by Cyclomatic Complexity in Software Testing? Compute cyclomatic complexity  $V(G)$  for following flow graph by using all 3 methods of computation. (7)



- q) List the reasons why testing Client/Server Architecture is difficult than Standalone applications. (5)
- r) Write note on Security Testing. (5)
6. a) Write note on Unit Testing in OO context. (6)
- b) Explain Surface Structure Testing. (5)
- c) How are Test cases affected by Class Hierarchy? (5)

OR

6. p) Write note on Integration Testing in OO context. (6)
- q) Why is Partition Testing used during the testing phase? Explain with example Category-based partitioning. (5)
- r) Explain Random Testing. (5)

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