

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA – SEMESTER –III • EXAMINATION – WINTER - 2016

Subject Code: 630001

Date: 30/12/ 2016

Subject Name: Structured and object oriented analysis and design methodology

Time: 10.30 AM TO 01.00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Attempt the following:

1. Differentiate widgets and gadgets. **02**
2. List different symbols used in Data Flow Diagrams with their meanings and example. **02**
3. Define the terms: Reification, Bipolar questions. **02**
4. Justify: Decision table are preferred when sequencing of condition is preferable. **01**

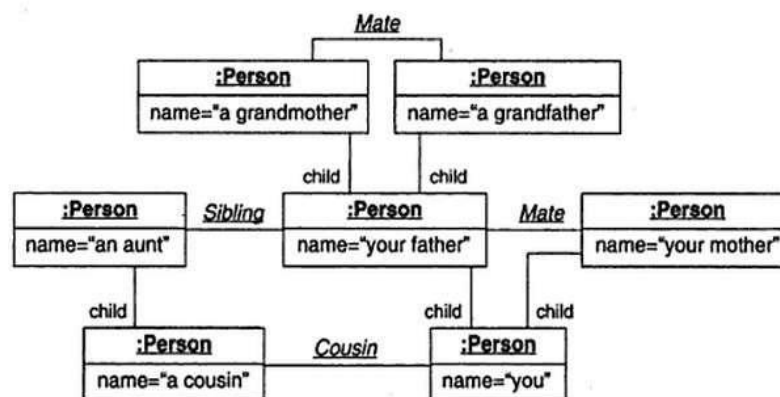
(b) Attempt the following:

1. Define the concept of bag and sequence for class diagram. **02**
2. Justify : Cipher codes can be used to reveal the information. **01**
3. Justify: Efficiency is one of the reasons for partitioning Data Flow Diagram. **01**
4. List the building blocks of the UML. **01**
5. Relationship between two classes is known as _____. **01**
6. Justify : Behavioral thing represent the statics view of a system. **01**

- Q.2 (a)** Three-phase induction motors will spin either clockwise or counterclockwise, depending on the connection to the power lines. In applications requiring motor operation in both directions, two separate contactors (power relays) will be used to make the connections, one for each direction. Also, in some applications of large motors, the motor starts through a transformer that reduces the impact of the power supply. The transformer is bypassed by a third contactor after the motor has been given enough time to come up to speed. There are three momentary control inputs: requests for forward, reverse or off. When the motor is off, forward or reverse requests cause the motor to start up and run in the requested direction. A reverse request is ignored if the motor is starting or running in the forward direction. An off request at any time shuts the motor off. Analyze above statements and construct State diagram. **07**
- (b)** Define SDLC. Draw the diagram for SDLC and explain steps of analysis and design of a system. **07**

OR

- (b)** Prepare a class diagram after analyzing following object diagram. **07**



- Q.3 (a)** List different methods for requirement collection. Explain one of them with advantages and disadvantages. **07**

- (b) 1. List all algebraic notations of data structure with its meaning. Explain them with one example. **04**
2. List the factors affecting selection of output technology. **03**
OR
- Q.3** (a) List different steps for developing DFD. Prepare context flow and level – 0 diagram for Purchase system. It is involving entities like inventory department, receiving department and supplier. Make assumption about the processes involved in purchasing items from supplier and providing to receiving department. **07**
(b) 1. Explain the following statement: The fit affects performance and well well being in HCI. **03**
2. List the steps for building decision table with appropriate example. **04**
- Q.4** (a) Discuss various types of user interfaces and justify their suitability. **07**
(b) Explain the guidelines to be followed while designing good display and Web forms. **07**
OR
- Q.4** (a) Discuss methods for ensuring data quality through input validation. **07**
(b) List and explain various building blocks of vocabulary of UML. **07**
- Q.5** (a) 1. How will you use include and extend relationship in use case diagram? Explain with example. **04**
2. Explain activity state and action state with example. **03**
(b) A company wants to prepare an automated system to maintain inventory management. The request for material is generated by different departments of organization. Inventory dept. checks for the stock. If item is available, will be provided to demanding department. Otherwise dept. will generate request for purchase of item. The suppliers will provide quotations of rates with the system, which will be sorted by dept. and then the best suitable quotation will be selected for supply. The items will be added to stock on receiving and provided to demanding department then. Prepare use case and sequence diagram for the said system. **07**
OR
- Q.5** (a) 1. Discuss the concept of forking and joining in activity diagram with example. **03**
2. Discuss the purpose of use of swimlanes in activity diagram with example. **04**
(b) Prepare activity and collaboration diagram for Q. 5 (b). **07**
