

**B.Tech. - VIEP - COMPUTER SCIENCE AND  
ENGINEERING (BTCSVI)**

**Term-End Examination**

00083

June, 2018

**BICSE-010 : DATA MODELLING AND UML**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Answer any seven questions. All questions carry equal marks. Assume suitable missing data, if any.*

1. (a) Name the models involved in object oriented modeling. Give suitable example to illustrate that wrong interlinking of models leads to bad design. 5
- (b) In object oriented modeling, the Data Flow Diagram (DFD) is drawn under the head of which model ? Discuss the components (along with their notations) of the data flow diagram. 5
2. (a) Use Case diagram relates to which model of UML ? Can we transform a data flow diagram to use case diagram ? If yes, then how ? And if no, then why ? 5

(b) How do class diagrams differ from instance diagrams ? Draw an instance diagram for the expression  $(A + B/2) * (A - B)$ . How does UML relate to object oriented modeling ?

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3. List the diagrams, under the head of the following models of UML and object oriented modeling :

$$4 \times 2 \frac{1}{2} = 10$$

- (a) Structural model
- (b) Behavioural model
- (c) Architectural model
- (d) Object model

4. Differentiate between the following :

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- (a) Object Oriented Analysis and Object Oriented Design
- (b) Object Oriented Modeling and Structured Modeling

Give suitable examples, while differentiating.

5. Write short notes on any *two* of the following :

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- (a) Aggregation Concurrency in State Diagrams
- (b) Aggregation in Class Diagrams
- (c) Types of Association in Class Diagrams

6. Discuss the various notations of Use Case diagrams. What is the role of actors in the use case diagrams ? How do actors of the use case diagram relate to the entities in data flow diagrams (DFD) ?

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7. (a) What is prototyping ? How does this concept of prototyping contribute to the modeling of a system ? Give suitable example in support of your answer. 5
- (b) Differentiate between Include relationships and Extend relationships. 5
8. Briefly discuss the following, with suitable example : 10
- (a) Falsification
- (b) Role names
- (c) Generalization
- (d) Communication relationships
9. Compare Event class and Association class. Give notations and utility of each class. Under what situation is it better to choose association as a class ? Justify your answer with suitable example. 10
10. Name the classes used to draw the sequence diagram. Briefly discuss the role of each class. Give notations of each class and use them to draw the sequence diagram for login process of any system. What is the relation between use case diagram and sequence diagram ? Elaborate the relation between the two, with suitable example. 10
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