| BICSE-010 |

B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

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December, 2017

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) What is UML ? Name the models which contribute to UML. List the diagrams drawn under the names of different models.   *5*

   (b) What is the role of Object model, Dynamic model and Functional model in Object Oriented Design ?   *5*

2. (a) How does a use case diagram relate to a dataflow diagram ? How does a use case diagram specify the modular description of any system ? Discuss with suitable example.   *5*

   (b) Discuss the role of any **two** of the following classes in a sequence diagram :   *5*

      (i) Boundary class

      (ii) Control class

      (iii) Event class

3. (a) Draw an event trace diagram for a telephonic conversation. Discuss all the notations. 5

(b) What is a State Diagram ? Under which model is a state diagram drawn ? Discuss the various notations of a state diagram. 5

4. (a) What is the difference between Concrete class and Abstract class ? Discuss the various types of relationships used to connect classes in any class diagram. 5

(b) Differentiate between Object Oriented Analysis and Object Oriented Design. 5

5. (a) How does object oriented modeling differ from structured modeling ? Give one advantage and one disadvantage of each. 5

(b) How is a Data Flow Diagram connected to an Entity Relationship Diagram and a Flow Chart ? Give a suitable example in support of your answer. 5

6. (a) Write short notes on any *two* of the following : 5

(i) Aggregation

(ii) Association

(iii) Link

(b) Differentiate between the following : 5

(i) Binary and Ternary association

(ii) Generalization and Specialization

7. (a) What is Falsification ? Discuss the role of falsification in object oriented modeling. 5

(b) Briefly discuss the concept of role names in a class diagram. Use this concept of role name in drawing the class diagram for the following situation : 5

"Many employees work for a company, among them, one is a manager."

8. (a) What do you understand by the term Prototyping ? How does prototyping contribute to object oriented design ? Give a suitable example in support of your answer. 5

(b) Draw a sequence diagram for the login process of any system. 5

9. Write short notes on the following : $4 \times 2\frac{1}{2} = 10$

(a) Behavioural Modeling

(b) Structural Modeling

(c) Architectural Modeling

(d) Extended Relationships

10. (a) Prepare an instance diagram for the expression $(x + y/2) / (x/3 + y)$, where parentheses are used in the expression for grouping, but they are not needed in the diagram. 5

(b) What are Deployment diagrams ? What is their utility in system modeling ? Discuss the various notations of a deployment diagram. 5