

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

00014

Term-End Examination

June, 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) UML contributes to which phase of SDLC (Software Development Life Cycle) ? Classify the models used in UML. Also discuss the role of each model. How does UML help in increasing the efficiency of software development ? 5
- (b) Describe the term Object Model. Discuss the types of diagrams drawn for object modelling. 5
2. (a) What are sequence diagrams ? Discuss the notations used to draw sequence diagrams. Describe the utility of sequence diagrams in UML. 5
- (b) Draw the instance diagram for the expression $(X + Y/Z) / (X/Z + Y)$. 5

3. (a) What are the components of a class diagram ? Prepare a class diagram for the instance diagram given below. 5



- (b) Draw the state diagram for an ATM transaction. Briefly discuss the notations involved in the state diagram. 5
4. (a) What do you understand by the term Aggregation ? Briefly discuss the types of Aggregation. 5
- (b) Explain the term Qualified Association with the help of suitable example. 5
5. (a) Differentiate between the following : 5
- (i) Association and Link
 - (ii) Aggregation and Specialization
- (b) Write short notes on any **two** of the following : 5
- (i) Communication Relationships
 - (ii) Functional Model
 - (iii) Abstract Classes

6. (a) Discuss the Event trace diagram with the help of a suitable example. 5
- (b) List the components of a Data Flow Diagram (DFD). Discuss the role of each component of the DFD. Draw a DFD to compute the volume and surface area of a cylinder. 5
7. (a) Explain the term Concurrency in dynamic modelling. Briefly discuss the types of concurrency. 5
- (b) How does object oriented analysis differ from object oriented design ? Explain with the help of a suitable example. 5
8. Write short notes on any **four** of the following : $4 \times 2 \frac{1}{2} = 10$
- (a) Events and Messages
- (b) Prototyping
- (c) Association and its Types
- (d) Aggregation Concurrency
- (e) Falsification
9. (a) What are Include relations ? Briefly discuss the utility of an Include relationship in UML. 5
- (b) How do Extended relationships differ from Include relationships ? Give a suitable example for each. 5

10. Discuss the role of each of the following models in UML :

- (a) Object Model
- (b) Dynamic Model
- (c) Functional Model

What are the various diagrams drawn under each model ? Give notations of each of the diagrams identified.

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