Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech., Summer 2017 – 18 Examination

Semester: 4 **Date:23/05/2018**
Subject Code: 03105251 **Time: 10:30 am to 1:00 pm**
Subject Name: Object Oriented Analysis & Design with UML **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions. **(15)**

1. The UML is a ……. language for specifying, visualizing, Constructing and documenting the artifacts of the software system.
2. …… diagram is the object oriented equivalent of flow charts and data flow diagrams.
3. When some behavior is similar across more than one use case, the common behavior is factored out and represented in a separate use Case. This is represented by …… relationship.
4. The …….. is the property of an object that distinguishes it from other Object.
5. Timing diagram is a special form of a……..diagram.
6. A state is an occurrence at a point in time. **[True/False]**
7. Dependency is a semantic relationship where a change in one thing causes a change in the semantics of the other thing. **[True/False]**
8. Interaction overview diagram is a type of structure diagram. **[True/False]**
9. The sequence diagrams basically display their lifelines of participants as they exchange messages.**[True/False]**
10. What is the significance of the multiplicity of an association?
    a) It constrains the number of times that an object of one participating class can be linked during its lifetime.
    b) It denotes the number of different classes that can be linked together.
    c) It constrains the number of objects of one participating class that can be linked to an object of the other class.
    d) b and c Both
11. Constraints can be represented in UML by
    a) {text} b) [text]. c) Constraint d) None of the mentioned
12. Which helps us in protecting privacy of Objects?
    a) Polymorphism b) Abstraction c) Encapsulation d) Inheritance
13. _____ is a special kind of association, representing a structural relationship between a whole and its parts.
    a) Dependency b)Aggregation c)Generalization d) Realization
14. **Define:** Abstract Class.
15. **Define:** Constraints.

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Define the purpose of following terms with suitable example and UML notations with respect to class model:
(i) Qualified association (ii) N-ary Association

B) Differentiate State and event. List and explain different types of events.

C) What is Multiplicity? Differentiate the following with example.
1. Aggregation versus Composition
2. Aggregation versus Association

D) Define Generalization. Draw the class diagram for the hospital Management system.

Q.3 A) Briefly explain following characteristics and themes of object oriented systems: **(07)**
Classification, identity, inheritance, encapsulation, polymorphism, sharing, Synergy.

B) Define scenario, sequence diagram. Draw a sequence diagram for issuing a book and renewing a book in online library management system with explanation. **(08)**

OR

B) What is software development process? Describe Software Development Life Cycle (SDLC) phases in detail. **(08)**

Q.4 **A)** Briefly describe the steps for constructing a domain Class model. **(07)**

OR

A) Draw the state diagram for a telephone line. At the start of a call, the telephone line is idle. When the phone is removed from the hook, it emits a dial tone and can accept the dialing of digits. Upon entry of a valid number, the phone system tries to connect the call and route it to the proper destination. The connection can fail if the number or trunk is busy. If the connection is successful, the called phone begins ringing. If the called party answers the phone, a conversation can occur. When the called party hangs up the phone disconnects and rewards to idle when put on hook again. **(07)**

B) What is purpose of use-case diagram. Draw the use-case diagram for Hotel Information System. There are two types of customers: Tour-group customers and Individual customers. Both can book, cancel, check-in and check-out of a room by Phone or via the Internet. There are booking process clerk and reception staff who manages it. A customer can pay his bill by credit card or pay utility bill. **(08)**