PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018 - 19 Examination

Semester: 4   Date: 29/04/2019
Subject Code: 03105251   Time: 02:00pm To 04:30pm
Subject Name: Object Oriented Analysis and 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** - (Fill in the blanks, one word answer, MCQ) (All are compulsory)   **(15)**
(Each of one mark)
1. Inheritance in object-oriented modeling can be used to
        a. generalize classes   b. specialize classes
        c. generalize and specialize classes   d. create new class

2. _____ _____ is a/an example of class.
        a. Inheritance   b. Polymorphism
        c. Data encapsulation   d. Data abstraction.

3. What among these is true?
        a) Associations may also correspond to relation between instances of three or more classes
        b) Association lines may be unlabeled or they may show association name
        c) All of the mentioned
        d) None of the mentioned

4. What is multiplicity for an association?
        a) The multiplicity at the target class end of an association is the number of instances that can be associated with a single instance of source class
        b) The multiplicity at the target class end of an association is the number of instances that can be associated with a number instance of source class
        c) All of the mentioned
        d) None of the mentioned

5. Which among these are the rules to be considered to form Class diagrams?
        a) Class symbols must have at least a name compartment
        b) Compartment can be in random order
        c) Attributes and operations can be listed at any suitable place
        d) None of the mentioned

6. A _____ is an abstraction that describes properties important to an application and ignores the rest.

7. _____ is the sharing of attributes and operations among classes based on a hierarchical relationship.

8. UML stands for _____ .

9. _____ model describes those aspects of objects concerned with time and sequencing of operations.

10. Composition is a special form of association.   **True/False**

11. Define multiplicity.

12. Define Inheritance.

13. Define polymorphism.

14. What you mean by visibility in class diagram.

15. What is class?

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

A) What is UML? Explain the types of model with their purpose in brief.

B) What is an abstract class? Write the difference between abstract class and concrete class.

C) What do you mean by Aggregation? Explain with an example.

D) Discuss Link and association concepts with example.

Q.3 A) Define the purpose of following terms with suitable example and UML notations with respect to class model. **(07)**
(i) Qualified association (ii) Association class (iii) Metadata

B) A simple digital watch has a display and two buttons to set it, the A button and the B button. The watch has two modes of operation, display time and set time. In the display time mode, the watch displays hours and minutes, separated by a flashing colon. The set time mode has two sub modes, set hours and set minutes. The A button selects modes. Each time it is pressed, the mode advances in the sequence: display, set hour, set minutes, display, etc. Within the sub modes, the B button advances the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event. Prepare a State diagram of the watch. **(08)**

OR

B) What is the importance of use case diagram? Explain relationships between use cases and actors with suitable example and proper UML notations. Draw use case diagram for an 'Online railway ticket reservation system. **(08)**

Q.4 A) Define Event, State, Transition and Guard condition. Using example draw state diagram. **(07)**

OR

A) Draw a sequence diagram for a session for purchasing stock with an online stock broker system and security exchange system. **(07)**

B) What the use is of "include" and "extends" relationships in use-case diagram? Draw the use-case diagram for Online Admission Process for Engineering Students in Parul University. **(08)**