

Master of Software Engineering (TCS-Evening)  
1st year, 2<sup>nd</sup> Semester examination, 2018  
**Subject: Object Oriented Software Systems**

Time - Three hours

Full marks - 100

*Answer question number 1(one) and any 5(five) from the rest.*

1. 10x2 = 20
  - a) Write the importance of software modeling.
  - b) Write the principles to be considered while modeling software.
  - c) How do we represent private, public and protected members in class diagrams?
  - d) How do we represent an abstract class and interface in UML?
  - e) Write the names of any four kinds of structure things used in UML
  - f) Write the names of four diagrams used in UML
  - g) What is the role of stereotype in UML?
  - h) How to represent "Zero or more" and optional multiplicity in UML?
  - i) How to represent a class scoped variable in a class?
  - j) What is the difference between a use case and a use-case diagram?
2. [4+6+6]
  - a) Briefly explain *aggregation* and *composition* in class diagram with examples?
  - b) What are differences between primary and secondary actors? Explain «*extend*» and «*include*» in use cases?
  - c) Describe with examples different kinds of messages used in UML sequence diagram
3. [4+6+6]
  - a) What are the different views that are considered when building an object-oriented software system?
  - b) What is the difference between «*uses*» and «*extends*»? Illustrate with examples.
  - c) Draw a use case diagram for the following scenario: Customer (actor) uses bank ATM to *Check Balances* of his/her bank accounts, *Deposit Funds*, *Withdraw Cash* and/or *Transfer Funds* (use cases). ATM Technician (actor) provides *Maintenance* and *Repairs* (use cases). All these use cases also involve Bank (actor) whether it is related to customer transactions or to the ATM servicing.