

**M. Sc. (Computer Science) 3<sup>rd</sup> Semester Examination – 2018**

**Subject: Computer Science**

**Paper: MCS – 301 (Object Oriented Analysis and Design)**

**Full Marks: 45**

**Time: 2 Hours**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Answer any 9 (nine) questions. All questions carry equal marks of 5.*

- 1) With suitable diagram, explain association, aggregation and composition. 5
- 2) a) What is UML? Briefly explain the origin of UML. 5
- Or
- b) Briefly explain “Role”, “Responsibility” and “Behaviour” in OOAD. 5
- 3) What are “abstraction” and “encapsulation”? Why are they called to be complimentary concept? 5
- 4) Draw the “Use Case Diagram” for ATM (Automatic Teller Machine). 5
- 5) With suitable and necessary code, explain “for – each” loop in Java. 5
- 6) a) Write a program in Java to display bits of an integer using “bitwise AND” operator. 5
- Or
- b) Write a program in Java to swap two integers using “bitwise XOR” operator. 5
- 7) What do you mean by “auto boxing and unboxing” in Java? Explain briefly. 5
- 8) a) What is “Anonymous Inner Class” in Java? Explain briefly. 5
- Or
- b) Differentiate between “Nested Class” and “Inner Class” in Java. Give suitable code. 5
- 9) a) With suitable diagram, explain different states and state – transitions of a thread in Java. 5
- Or
- b) What is “Enum” in Java? Explain briefly. 5
- 10) a) What are “final method” and “final class” in Java? 5
- Or
- b) Briefly explain the use of “finally” and “throws” clauses in Java Exception Handling. 5
- 11) a) Explain how Java handles “forward referencing”. 5
- Or
- b) Explain the method of initializing “Array of Objects” in Java. 5