

**MANIPAL ACADEMY OF HIGHER EDUCATION, MANIPAL****SCHOOL OF INFORMATION SCIENCES  
FIRST SEMESTER ME (EMBEDDED SYSTEMS & INSTRUMENTATION) DEGREE  
EXAMINATION – NOVEMBER 2018****SUBJECT:** ESI 617.2 (Elective 2) - ADVANCED PROGRAMMING TECHNIQUES

Thursday, November 22, 2018

Time: 10.00 – 13.00 Hrs.

Max. Marks: 100

**Answer All the questions**

1. List the important object oriented principles. Explain it in detail. (10 Marks)
2. a) What is a reference variable? What is its major use?  
b) What are the ways of creating Symbolic constants in C++  
c) What is the application of the scope resolution operator ( :: ) in C++?  
(4+3+3=10 Marks)
3. What is a **friend** function? What are the merits and demerits of using friend functions?  
Explain with an example (10 Marks)
4. What is **operator** overloading? Explain it with an example in C++ (10 Marks)
5. Explain virtual functions with an example in C++. Also, comment on the compiler behavior with respect to virtual functions. (10 Marks)
6. Explain the features of Java. (10 Marks)
7. Explain the various operators used in Java. (10 Marks)
8. Explain the use of keyword **super** with examples (with reference to Java). (10 Marks)
9. What is dynamic method dispatching (w.r.t Java)? Illustrate with an example. (10 Marks)
10. Explain with a diagram, the different state methods used in Applet skeleton (10 Marks)