# JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
## MAKE UP EXAMINATION- APRIL-2018
### B.Tech. (ECE) 6th Semester

COURSE CODE: 10B11CI614          MAX. MARKS: 25
COURSE NAME: Object-Oriented Systems and Programming
COURSE CREDITS: 04          MAX. TIME: 1 HR 30 MIN

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*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

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1. Define a doubly linked list class in C++. The class should have the following member functions:
   a. Insert an element at the beginning of the list
   b. Insert an element at the end of the list.
   c. Delete an element from beginning of the list.
   d. Delete an element from end of the list.      **[6 marks]**

2. Explain the concept of virtual tables and virtual pointer with a suitable example.
        **[5 marks]**

3. Define a class Student with data members as roll number, name, and address. Write multiple objects of this class into a file "Stud.txt". Perform the following file handling operation in the program:
   a. Delete the object where roll number is 101.
   b. Update the address where roll number is 105.      **[5 marks]**

4. Define a Dog class that includes fields for a breed (for example, "Labrador") and eye color. Include functions to overload extraction and insertion operators. Overload an operator *() function for the Dog class. When you multiply two Dog objects, the result is a Dog object. If two objects of Dog are of the same breed, then the resulting Dog is that breed; if the two objects of Dog have different breeds, then the resulting Dog is mixed breed. Obtain a random number of 0 or 1 for the resulting Dog's eye color. When the random number chosen is 0, use eye color from the first operand Dog for the resulting Dog's eye color; when the random number is 1, use the eye color of the second Dog for the resulting Dog.      **[6 marks]**

5. Briefly explain the following terms in C++.
   a. Friend class
   b. Hybrid inheritance
   c. Reference operator      **[3 marks]**