**Mid Semester Examination**

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY, ALLAHABAD

**OBJECT BASED MODELING (CA 3305)**

**MCA III SEMESTER** (Odd Semester 2016-2017)

SUBJECT CODE: CA3305 Time: 1.30 Hrs Max Marks: 20

**Note: Answer all questions. All the parts of a question shall be answered together in sequence.**

Q1. Explain the following briefly with examples. (2)

(i) Abstraction (ii) Encapsulation

Q2. When do you need to model association among classes itself as a class? Give example. (2)

Q3. Consider the excerpts of poem written by *Beatrix Potter,* [8]

*We have a little garden,*
*A garden of our own,*
*And every day we water there*
*The seeds that we have sown.*

*We love our little garden,*
*And tend it with such care,*
*You will not find a faded leaf*
*Or blighted blossom there.*

Analyse the poem given above and consider it as a specification of a sample database domain. It contains two small semantically homogeneous paragraphs, i.e. the paragraphs that describe the common elements of the sample domain.

Use a methodology for Object modelling to design a conceptual schema for the sample domain given above. The design process must follow a methodology in which new elements of a design are iteratively discovered and added to the individual conceptual schemas. You have to read ("pass" through) the specification divided into the paragraph several times and in each "pass" you have to discover different components of a design. The attributes and identifiers of the classes are up to you.

For example, in the first pass you must discover the classes of objects, in the second pass, you discover the aggregations, in the third pass you discover generalizations, then attributes, and so on. At the end of all passes you should obtain a number of small conceptual schemas, one for each of the individual paragraphs of the specification. Next, in the final stage you must integrate the individual schemas into the final design.

Q4. Consider a computer Email system. [8]

(i) List three actors. Explain the relevance of each actor.

(ii) One use case is to get email. List two additional use cases at a comparable level of abstraction. Summarise the purpose of each use case with a sentence.

(iii) Draw a use case diagram for email system.

(iv) Write a normal scenario for each use case listed in (ii). Remember that a scenario is an example, and need not exercise all functionality of the use case.

(v) Write an exception scenario for each use case.

(vi) Give a sequence diagram corresponding to each scenario in (iv).