Questions for self assessment

Module 2--Lecture 1

1. What are the three basic phases of high level synthesis?

2. Define formally the scheduling problem. What are the different types of scheduling?

3. Explain the allocation problem with examples.

4. Define the binding problem. What are the three sub-functions of binding?

5. Among the three phases of high level synthesis, which do you think requires maximum manual interaction?

Module 2--Lecture 2,3

1. What are exact algorithms and what are heuristics?

2. Exact algorithms provide optimal solution but heuristics may not always provide optimal solution. Still heuristics have an important role in high level synthesis. Why?

3. Explain as soon as possible (ASAP) heuristic with an example.

4. Explain as late as possible (ALAP) heuristic with the same example that was used in Question 3. Among ASAP and ALAP, which provided a better result for the example considered.

5. Explain an algorithm to solve the resource constrained scheduling problem.

6. Map the scheduling problem to 0-1 Integer Linear Programming. What does it show about the complexity of the scheduling problem?

7. Consider any heuristic for the high level synthesis problem. Prove using an example that the heuristic provides a sub-optimal solution compared to ILP.

Module 2--Lecture 4

1. Illustrate using an example that area of interconnects depends on binding.

2. Map the binding problem to clique partitioning. What does it specify about the complexity of the binding problem?

3. What is the complexity of the left edge algorithm (for the binding problem)?

4. Explain some extra features that can be provided by the clique partitioning based algorithm compared to the left edge algorithm (for the binding problem).

5. Explain the iterative algorithm for the binding problem.