5   Formal Models of Language (pjb48)

Consider the following natural language sentences:

- a toast to the queen was raised tonight

- a toast was raised to the queen tonight

(*a*) Provide valid unlabelled dependency parses for both of the sentences. Provide motivation for the dependencies and their direction.   [5 marks]

(*b*) Provide a dependency grammar that is consistent with both of your dependency parses.   [5 marks]

(*c*) Can you write a context-free grammar that is weakly equivalent to your grammar? Explain your answer.   [1 mark]

(*d*) Demonstrate how a modified LR shift-reduce parser could yield your dependencies for the first example sentence, *"a toast to the queen was raised tonight"*. Show the state of the parser, the actions taken and the dependencies recorded. You may finish the demonstration when *"was"* has been shifted onto the stack.
                                                                        [6 marks]

(*e*) Explain why data driven dependency parsing is described as grammarless.
                                                                        [3 marks]