1994 Paper 12 Question 10

Complexity

What is a Hamiltonian Circuit? What is the Boolean Satisfiability Problem "3-SAT"? [5 marks]

In 50 to 100 words each, sketch

(a) how an efficient solution to 3-SAT would allow you to construct an efficient solution to the Hamiltonian Circuit problem [6 marks]

(b) how an efficient solution to the Hamiltonian Circuit problem would allow you to solve 3-SAT [6 marks]

(c) what is meant by "efficient" in this context [3 marks]

You are not expected to include technical details of any constructions you need in deriving one algorithm from another: a clear statement of what can be done will suffice.