1 Artificial Intelligence I (SBH)

(*a*) Describe the basic algorithm for performing *local search*. Give an example of a search problem for which it is an appropriate solution, and an example of a search problem for which it is not. When would an algorithm such as $A^\star$ search be preferred? [7 marks]

(*b*) Give two examples of a situation that might reduce the effectiveness of the basic local search algorithm. For each example you give, describe in detail a modification to the basic algorithm that might be used to overcome it.

[8 marks]

(*c*) It is suggested to you that an application previously addressed as a *constraint satisfaction problem* might alternatively be solved using some variant of local search. Is this a reasonable suggestion? If it is, then outline a way in which it might be achieved. If not, then provide a reasoned discussion explaining why.

[5 marks]