Programming answers should be written in some notation approximating SML or OCaml.

(a) Describe what is meant by tail recursion. [4 marks]

(b) Eliminate tail recursion from foldl given below. Explain your answer.

(*
    foldl : ('a -> 'b -> 'a) -> 'a -> 'b list -> 'a
*)

let rec foldl f accu l =
    match l with
    | [] -> accu
    | a::l -> foldl f (f accu a) l

[8 marks]

(c) Eliminate tail recursion from the following mutually tail-recursive functions. Explain your answer.

let rec is_even n =
    if n = 0
    then true
    else is_odd (n - 1)

and is_odd n =
    if n = 0
    then false
    else is_even(n - 1)

[8 marks]