SOLUTION NOTES

Introduction to Functional Programming 2001 Paper 12 Question 11 (AD)

```
fun partcart x []   = []
          | x h::t = (x,h)::(partcart x t);
```

It has type $\alpha \rightarrow \beta$`list` $\rightarrow (\alpha \star \beta)$`list`

[5 marks]

```
fun cartesian ([], l2) = []
  | cartesian (h::t, l2) = (partcart h l2)@cartesian(t,l2);
```

It has type (α`list` $\star$ β`list` $\rightarrow (\alpha \star \beta)$`list`

[5 marks]

```
fun map f []     = []
  | map f (h::t) = (f h)::(map f t);
```

```
fun foldl f e []  = e
  | foldl f e (h::t) =
         foldl f (f(h,e)) t;
```

[6 marks]

```
fun cartesian (l1, l2) =
             foldl @ [] (map (fn x => partcart x l2) l1);
```

[4 marks]