These solution notes are as submitted in January 2003

Artificial Intelligence I 2003 Paper 6 Question 7 (SBH)

(*a*)

```
C= 5, D= 5, E= 4, F=4
C= 5, D= 5, E= 4, F=6
C= 3, D= 5, E= 4, F=6
C= 3, D= 5, E= 4, F=4
```

So `[A,B]` is the position of the corner of the tile, and four different orientations are possible.

(*b*)

```
valid([[A,B],[C,D],[E,F]],[N,M]) :- A =< N, A >=1, B =< M, B >= 1,
                                    C =< N, C >=1, D =< M, D >= 1,
                                    E =< N, E >=1, F =< M, F >= 1.

goodplace([[A,B],[C,D],[E,F]],[N,M]) :- tile([[A,B],[C,D],[E,F]]),
                                        valid([[A,B],[C,D],[E,F]],[N,M]).
```

(*c*)

```
dmember(X,[X|T]) :- !.
dmember(X,[Y|T]) :- dmember(X,T).

member(X,[X|T]).
member(X,[Y|T]) :- remove(X,T,T2).

remove(X,[X|T],T) :- !.
remove(X,[Y|T],[Y|T2]) :- remove(X,T,T2).

tiling([],[],Size).
tiling(Ok,[[A,B],[C,D],[E,F]],Size) :- member([A,B],Ok),
                                goodplace([[A,B],[C,D],[E,F]],Size),
                                dmember([C,D],Ok),
                                dmember([E,F],Ok),
                                remove([A,B],Ok,Ok2),
                                remove([C,D],Ok2,Ok3),
                                remove([E,F],Ok3,Ok4),
                                tiling(Ok4,R2,Size).
```