1. Problem 6.8, p.382

2. Problem 7.3, p.456

3. Suppose that procedure swap2 is declared as follows:

```pascal
procedure swap2(x,y:integer);
    procedure f():integer;
    var z:integer;
    begin (* f *)
        z:=x; x:=y; return z
    end f;
    begin (* swap2 *)
        y=f()
    end swap2;
```

Describe the effect of the procedure call swap2(i, A[i]) under each of the following parameter-passing methods:

a. Call-by-value
b. Call-by-reference
c. Copy restore
d. Call-by-name

4. Consider the following syntax-directed definition:

<table>
<thead>
<tr>
<th>Production</th>
<th>Semantic Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>F → D</td>
<td>F.w := 1</td>
</tr>
<tr>
<td></td>
<td>F.v := D.v</td>
</tr>
<tr>
<td></td>
<td>D.s := -1</td>
</tr>
<tr>
<td>F → F₁ D</td>
<td>F.w := F₁.w + 1</td>
</tr>
<tr>
<td></td>
<td>F.v := F₁.v + D.v</td>
</tr>
<tr>
<td></td>
<td>D.s := -F₁.w - 1</td>
</tr>
<tr>
<td>D → 0</td>
<td>D.v := 0</td>
</tr>
<tr>
<td>D → 1</td>
<td>D.v := 2^D.s</td>
</tr>
</tbody>
</table>

(a) Which of the above attributes are inherited?
(b) Which are synthesized?
(c) Is the above syntax-directed definition L-attributed? Briefly explain.

(d) Show the Translation Scheme for the above syntax-directed definition, which obeys the three restrictions that ensure that an attribute value is available when an action refers to it.

(e) Transform the given syntax-directed definition so that all inherited attributes are defined by copy rules.