Modula-2

Define the terms *opaque type* and *concrete type*. [5 marks]

The following is a shortened version of one of the definition modules described in the Modula-2 user manual:

```
DEFINITION MODULE Processes;
  TYPE
    Semaphore;
  Procedure InitSemaphore (VAR a:Semaphore);
  Procedure Signal (s:Semaphore);
  Procedure Wait (s:Semaphore);
.
END Processes.
```

Provide a suitable specification for type *Semaphore* as it might appear in the associated implementation module. [5 marks]

Write a fragment of Modula-2 code which uses a variable of type *Semaphore* and exploits the three procedures given above. Explain what the code does when each of the three procedures is invoked. [10 marks]