4. (a) Explain and illustrate two different methods to translate Boolean expressions into intermediate code in 3-address form, and compare them in terms of efficiency and speed.

[11]

(b) Explain what is an *activation record*. Describe the steps that need to be performed and code that needs to be generated when translating function declarations and function calls. Illustrate with the following function written in a language with *static binding*, paying special attention to non-local variables:

```
function main () {
     int a, b ;
     read (a) ; read (b);
     print (f (a))  }
function f (x) {
     int y = a + x/2 ;
     if y < b then return (y)
             else return (f (y))  }
```

[14]