Operating Systems

(a) Describe with the aid of a diagram how a simple computer executes a program in terms of the *fetch–execute cycle*, including the ways in which arithmetic instructions, memory accesses and control flow instructions are handled.

[12 marks]

(b) Explain how a program accesses I/O devices when:

(i) it is running in supervisor-mode;

[5 marks]

(ii) it is running in user-mode.

[3 marks]