2003 Paper 1 Question 12

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]