

1997 Paper 11 Question 12

Digital Electronics

A lock has five buttons and a knob used to open the lock when the five buttons have been pressed in the correct sequence. Whenever the knob is turned, successfully or not, the state of the lock is reset. The correct sequence is hardwired into the control logic of the lock.

- (a) Describe the inputs and outputs for a logic circuit which can be used to control the lock. [5 marks]
- (b) Draw a state diagram for the logic circuit. [10 marks]
- (c) Derive equations for the logic system using J-K flip flops to hold state variables. *Do not minimise the equations.* [5 marks]