

UNIVERSITY OF SWAZILAND  
FACULTY OF SCIENCE  
DEPARTMENT OF ELECTRONIC ENGINEERING

**SUPPLEMENTARY MAIN EXAMINATION 2005**

Title of the Paper: **ELECTRONICS II**

Course Number: **E440 PAPER 2**, Practical Examination

Time Allowed: **Three Hours**.

Instructions:

Points for different sections are shown in the right hand margin.

Special Requirement:

One floppy disc (labeled with your I.D. and name), **which must be handed in, together with your answer sheet**, at the end of the examination

THIS PAPER HAS 2 PAGES, INCLUDING THIS PAGE

DO NOT OPEN THE PAPER

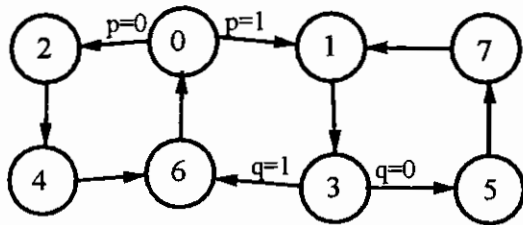
UNTIL PERMISSION HAS BEEN GIVEN BY THE INVIGILATOR.

## A 3-Mode Sequencer

### System Description:

This sequencer has 3 modes of operation, selectable through the external input  $p$  and  $q$  parameters. The description of its operation is given below by the state diagram. Do the design, implement, and simulation.

State Diagram:



### Design Details:

Implementation may be in the form of a ROM, a PLA, or traditional logic gates (simpler). If a ROM or a PLA, a table of the address and its content is required instead of flip-flop functions. Give the following items:

State table	20pts
Flip-flop input functions (each K-map-5pts, subtotal-15, functions-10pts)	25pts
Sequencer circuit diagram: this will be the one shown in the simulation file	25pts

### Simulation:

30pts

parts of the simulation test:

a. the choice of the components.	6pts
b. set of proper monitor points in the circuit.	6pts
c. wiring scheme.	10pts
d. proper remarks or notes on the circuit diagram.	8pts