

2005 Paper 9 Question 2

VLSI Design

- (a) Sketch stick diagrams of memory cells for:
- (i) read-only memory; [3 marks]
 - (ii) static memory; [3 marks]
 - (iii) dynamic memory using standard CMOS; [3 marks]
 - (iv) dynamic memory for dense layout. [3 marks]
- (b) Extend your design for parts (ii) and (iii) to accommodate four read ports. What would inhibit such an extension for design (iv)? [6 marks]
- (c) State *two* considerations that are becoming increasingly important in memory design as feature sizes decrease. [2 marks]