

COE 464, Term 042

Testing of Digital Circuits

HW#5

Due Date: Sunday, May 29, 2005

- Q.1.** Problem 9.4
- Q.2.** Problem 9.5
- Q.3.** Problem 9.8
- Q.4.** Problem 9.9
- Q.5.** Problem 10.16
- Q.6.** Problem 11.19
- Q.7.** Problem 11.20
- Q.8.** Given the characteristic polynomial $p(x)=1+x+x^4$:
- (i) Demonstrate that the polynomial is a primitive polynomial.
 - (ii) Show a Type 1 LFSR implementation of $p(x)$, and determine the sequence generated by the LFSR starting with a seed of 1.
 - (iii) Show a Type 2 LFSR implementation of $p(x)$, and determine the sequence generated by the LFSR starting with a seed of 1.
- Q.9.** Consider the circuit shown below, where a 3-stage LFSR is feeding a scan chain of length 8. Assume that the scan chain drives the gates G1 and G2 as shown and that G1 and G2 are connected to primary outputs. Determine whether the indicated single stuck-at faults can be detected by the LFSR or not. If a fault can be detected, determine the seed of the LFSR to generate the test for the fault.

