Do not turn this page until you have received the signal to start.
(In the meantime, please fill out the identification section above, and read the instructions below.)

This test consists of 3 questions on 5 pages (including this one). When you receive the signal to start, please make sure that your copy of the test is complete.

Please answer questions in the space provided. You will earn 20% for any question you leave blank or write "I cannot answer this question," on. You will earn substantial part marks for writing down the outline of a solution and indicating which steps are missing.

Good Luck!
QUESTION 1. [20 marks]

PART (A) [5 marks]

What are the similarities and differences between a token ring local network and a bus local network?

PART (B) [5 marks]

Describe the trade-offs required when considering ever-larger amounts of random-access memory (RAM), and ever-smaller, faster components for modern computers.
PART (C)  [5 marks]

Describe how an operating system gives the illusion of multi-tasking.

PART (D)  [5 marks]

Explain the hazards intrinsic in web-browsing.
Question 2. [10 marks]

Explain as much as you can about the following expressions and what they produce. You may assume that they were preceded by the expression:

(require picturing-programs)

Part (a) [2 marks]

(map add1 (map sqr (map string-length (list "one" "two" "three" "four"))))

Part (b) [2 marks]

(string-length (substring (string-append "two" "fold") 1 4))

Part (c) [2 marks]

(or (and (< 2 3) (> 7 9)) (not (equal? "high" "low")))

Part (d) [2 marks]

(rotate 30 (scale 1.5 (flip-horizontal pic:hacker)))

Part (e) [2 marks]

(define p (make-posn 2 3))
(make-posn (* 3 (posn-y p)) (/ (posn-x p) 2))
QUESTION 3. [10 MARKS]

Explain as much as you can about how palindrome? works. Explain, step-by-step, what happens when (palindrome? "mum") is run. Describe what is produced by (palindrome? "rotor"). Write a check-expect statement for (palindrome? "rot").

(define (palindrome? s)
  (cond
    [(<= (string-length s) 2) true]
    [else
      (and
        (equal? (substring s 0 1)
          (substring s (sub1 (string-length s))))
        (palindrome? (substring s 1 (sub1 (string-length s))))))])

# 1: _____/20
# 2: _____/10
# 3: _____/10
TOTAL: _____/40