Here are example solutions for Quiz 1. Other solutions are possible for some cases.

Part 1: (23 points)

Question 1.
Procedure: no, $A \rightarrow \text{no}$

Question 2.
error – not a procedure

Question 3.
18, number

Question 4.
(4 3)

Question 5.
-16, number

Question 6.
procedure: no $\rightarrow$ no

Question 7.
([proc] 2 3)
Part 2: (18 points)

Question 8.

(define (add-em-up lst)
  (if (null? lst)
      0
      (+ (registered (car lst))
          (add-em-up (cdr lst)))))

(define (add-em-up lst)
  (define (aux sum todo)
    (if (null? todo)
        sum
        (aux (+ sum (registered (car todo)))
             (cdr todo))))
  (aux 0 lst))

Question 9.

(define (compute-average-per-class tags data)
  (if (null? tags)
      '()
      (cons (list (car tags) (/ (total-students (car tags) data)
                                (number-terms (car tags) data)))
            (compute-average-per-class (cdr tags) data))))
Part 3: (24 points)

Question 10.

(define (helper tag stats)
  (if (null? stats)
      '()
      (cons (list (list tag (term (car stats)))
               (registered (car stats)))
      (helper tag (cdr stats)))))

Question 11.

(define (convert-all data)
  (if (no-classes? data)
      '()
      (append (convert-class (next-class data))
              (convert-all (rest-classes data))))

Question 12.

(define (make-class-extractor what-class)
  (lambda (x) (= what-class (caar x))))

Question 13.

(define (make-class-extractor what-class what-term)
  (lambda (x) (equal? (list what-class what-term) (car x))))
Part 4: (15 points)

Question 14.
linear B

Question 15.
constant A

Question 16.
quadratic D

Question 17.
linear B
Part 5: (20 points)

Question 17.
Both option A and B will work as described

Question 19.

(define (mul a b)
  ((REPEAT (LAMBDA (X) (+ A X)) B) 0))

Question 20.

(define (my-exp a b)
  ((REPEAT (LAMBDA (X) (* A X)) B) 1))