MCN 7105: SCHEME BASICS

PRACTICE EXERCISE

1. Predict the outcome of the following expressions and check your answer.
    a. (+ 5 4 3)
    b. (define a 3)
    c. (define b (+ a 1))
    d. (+ a b (* a b))
    e. (= a b)
    f. (if (> a b) a b)
    g. (if (and (> b a) (< b (* a b))) b a)
    h. (+ 2 (if (> a b) a b))
    i. (* (cond ((> a b) a)
        ((< a b) b)
        (else –1))
      (+ a 1))
    j. ((if (< a b) + -) a b)
2. Write Scheme expressions for the following:
    a. 23 + 45 – 16 /4
    b. (12/19 + (5+9) / 2) / ((10+11)*20 / 3)
    c. If a person is above 18, print a message that allows them to vote, otherwise print an error message
    d. A certain university uses the following criteria for grading students:
    if mark is greater than 80, give an A
    If mark is between 65 and 80, give a B
    If mark is between 50 and 65, give a C
    Otherwise, the student has failed.
    Write a Scheme expression to grade students.
3. Write a procedure ***cube*** that returns the cube of a given number.
4. Write another procedure ***sumcubes*** that returns the sum of cubes of given numbers.
5. Write the following procedures
    a. ***inc*** which increments a given value by 1
    b. ***dec*** which decrements a given value by 1

END