**Demarcation**

**Gr 10 IT November Practical Exam**

**Total Marks: 120**

**Time: 3 hours**

The exam will consist of a single Delphi program with different tab sheets per sub question.

# **Skills list:**

## Basic components in Delphi

* Edit, label, button, bitmap button, richedit, memo, datetimepicker, panel, combobox, radiogroup, checkbox, spinedit, image
* Changing the properties of components using code:
  + Enabled, visible, caption, text, font size, font name, font style, color, width, height, top, left, stretch, load picture into image component
* Using methods such as setfocus and clear.
* Setting tab stops in a richedit.
* Dialog boxes: Inputbox and showmessage

## Variables and datatypes

* String, Char, Integer, Real, Boolean, TDate
* Local vs global variables
* Type casting: IntToStr, FloatToStrF, StrToInt, StrToFloat, DateToStr, FormatDateTime.
* Constants

## Algorithms such as:

* Determine smallest, largest value of more than two values
* Swapping values
* Counting the number of instances of input
* Determining totals and averages
* Basic calculations such as calculating area, volume, VAT, discount, percentage
* Determine factors and multiples of another number
* Determine whether a number is even or odd, prime, composite
* Determine the lowest common multiple (LCM) and greatest common divisor (GCD)
* Determine the current age based on a given date of birth or ID number
* Convert a decimal number to a binary number or hexadecimal number, and vice versa

## Calculations

* Operators ( + , - , \* , /) and order of precedence
* Integer Division: MOD and DIV
* Comparison operators and performing logical comparisons (>, <, >=, <=, =, <>)
* Built-in Functions:
  + Mathematical:
    - random, randomrange, round, roundTo, trunc, frac, odd, sqr, sqt, power, ceil, floor, pi, abs
  + Date:
    - Date, Dayof, Monthof, Yearof, CurrentYear, IsLeapYear, DayOfWeek, LongMonthNames, ShortMonthNames, LongDayNames, ShortDayNames, Yearsbetween, Daysbetween, DaysInMonth, DaysInaMonth
  + String:
    - chr, ord, length, upcase, uppercase, lowercase, pred, succ
* Increment and decrement integers
* Validation: Format check, range check, presence check, check digit (using a provided algorithm)

## Conditional structures

* If statements including if…then…else
* Nested If statements
* Using the IN operator in conditions
* More than one condition in an if statement and loop
* Case statements

## Loops and debugging

* Correct use of loops: for, repeat and while.
  + Know when to use conditional and unconditional loops
* Nested loops
* Basic validation techniques (input and processing).
* Repeatedly ask for input until it is valid

## String handling

* Concatenate strings
* Length, upcase, uppercase, lowercase functions
* Isolating a single character in a string
* The difference between a character datatype and a string datatype. Eg. sName[1]
* Validating character input
* Using loops to manipulate strings:
  + Reverse a string
  + Building an output string
  + Display a string/characters horizontally, vertically or in a grid
  + Isolate digits in a string
    - Evaluate each digit
    - Use these digits in calculations
  + Isolate characters in a string
    - Validate characters according to certain criteria. Eg. Vowels, spaces, letters
  + Remove characters from a string by building a new string
  + Counting/Finding characters or words in a string.
  + Isolating words in a sentence