FACULTY OF MANAGEMENT AND ADMINISTRATION

COURSE TITLE: CIS 202 – PROGRAMMING I (Conventional)

SEMESTER 1:   FINAL EXAMINATION   – NOVEMBER 2014

LECTURER: MR T. MAKAMBWA

TIME: 3 HOURS

INSTRUCTIONS

Answer *all* questions in Section A and any *three* from Section B
All codes *must* be in Visual Basic
Total possible mark is 100

Start **each** question on a new page in your answer Booklet.

The marks allocated to **each** question are shown at the end of the section.

Show all your workings.

Credit will be awarded for logical, systematic and neat presentations.

Section A (40 Marks)

Answer *all* questions from this section

Question One

a)
Writing a Simple Multiplication Program
In this program, you insert two text boxes, three labels and one button. The text boxes are for the user to enter numbers, the label is to display the multiplication operator and the other label is to display the equal sign. The last label is to display the answer. The run time interface is shown in Figure below:
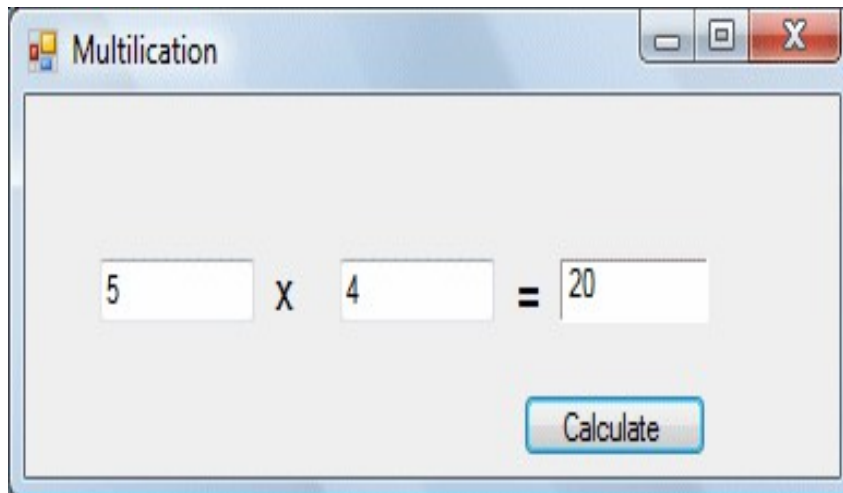
(10 Marks)

b) Write a program that will compute the following:
   i.   1000-100-95……………..5
   ii.   10+20+30+………………1000

(5+5 Marks)

Question Two

Write a Visual Basic program that calculates the following
i)   Area of a right-angled triangle
ii)   Area of a square
iii)   Area of a circle
iv)   Volume of a cube
v)   Perimeter of Rhombus

(4x5 Marks)

Section B (60 Marks)
Answer any *three* questions from this section

Question Three

Write Mathematical functions that compute the following:

a) Exponential
b) Absolute value
c) Fix
d) Round
e) Natural Logarithm

(20 Marks)

Question Four

   a) Pseudo code for Vintage Videos

Begin procedure
    Input Video Price
    Taxes = 0.07 x Video Price
    Amount Due = Video Price + Taxes
    Output Taxes and Amount Due
End procedure

Write a Program to calculate the Amount due.   **(10 Marks)**

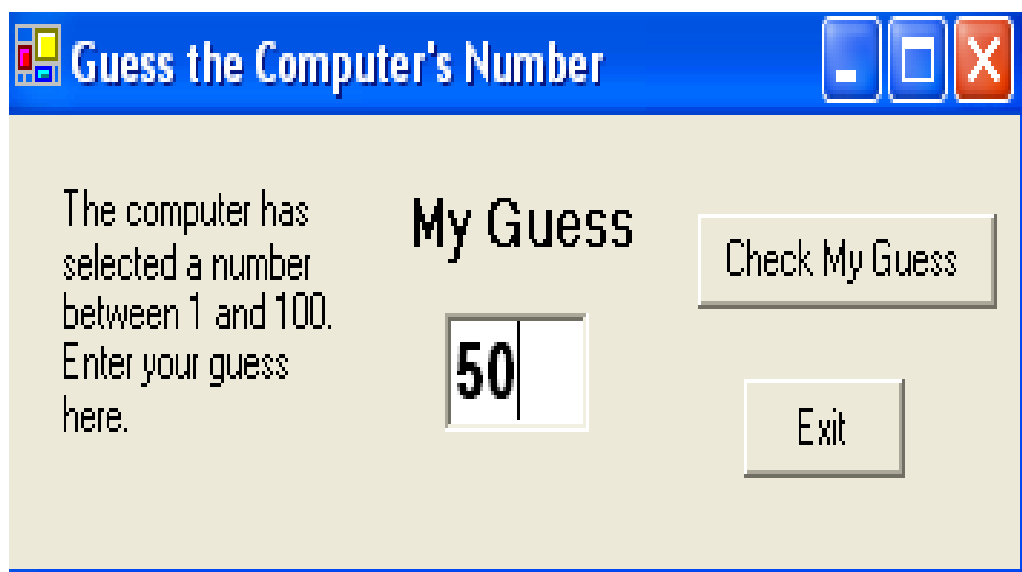 **b)** Write a VB program that converts degrees Centigrade to Fahrenheit and vice versa.
SUGGESTED SOLUTION
The formula for converting Fahrenheit to centigrade is: C = (F – 32) * (5 / 9)
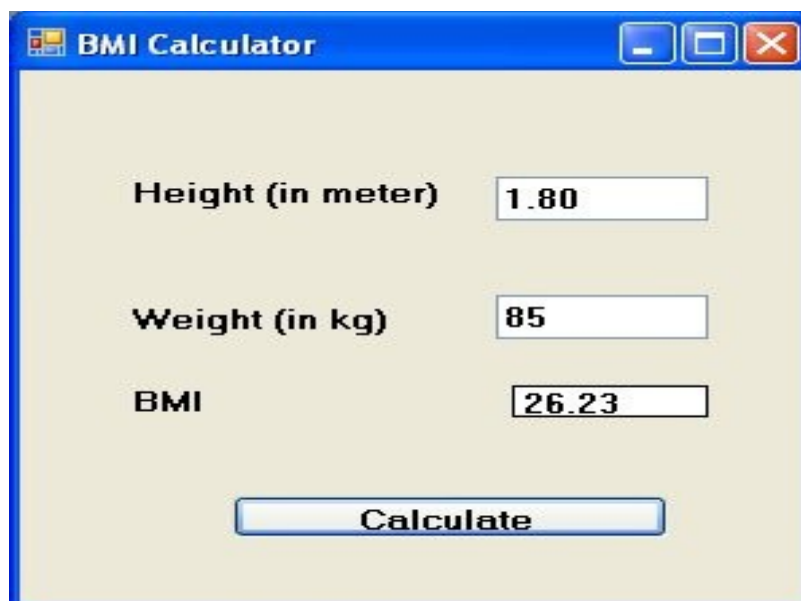   **(10 Marks)**

Question Five

a)

Create a program to have the computer pick a random number and allow a player to guess the number. The program will tell the user if their guess is correct or, if incorrect, if the guess is too high or too low.
The program should allow the player to start new games or exit the game completely. **(10 Marks)**

b)

Many people are obese now and it could affect their health seriously. If your BMI is more than 30, you are obese. You can refer to the following range of BMI values for your weight status.
Underweight = <18.5
Normal weight = 18.5-24.9
Overweight = 25-29.9

Obesity = BMI of 30 or greater
Now create a calculator in Visual Basic that can calculate the body mass index, or BMI of a person based on the body weight in kilogram and the body height in meter. BMI can be calculated using the formula weight/ (height)^2, where weight is measured in kg and height in metres. **(10 marks)**

Question Six

Develop Visual Basic applications that will create a Dental Payment form

Application Requirements

A dentist's office administrator wishes to create an application that employees can use to bill patients. The application must allow users to enter the patient's name and specify which services were performed during the visit.
The application will then calculate the total charges. If a user attempts to calculate a bill before any services are specified, or before the patient's name is entered, an error message informing the user that necessary input is missing will be displayed
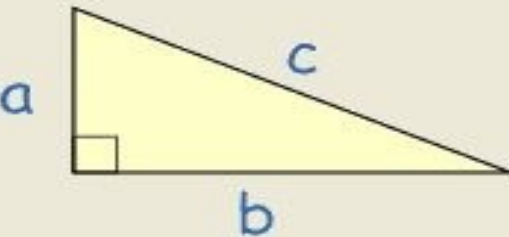
(20 marks)

Question Seven

Write programs that will perform the task shown below:
a)

(7 Marks)

b)

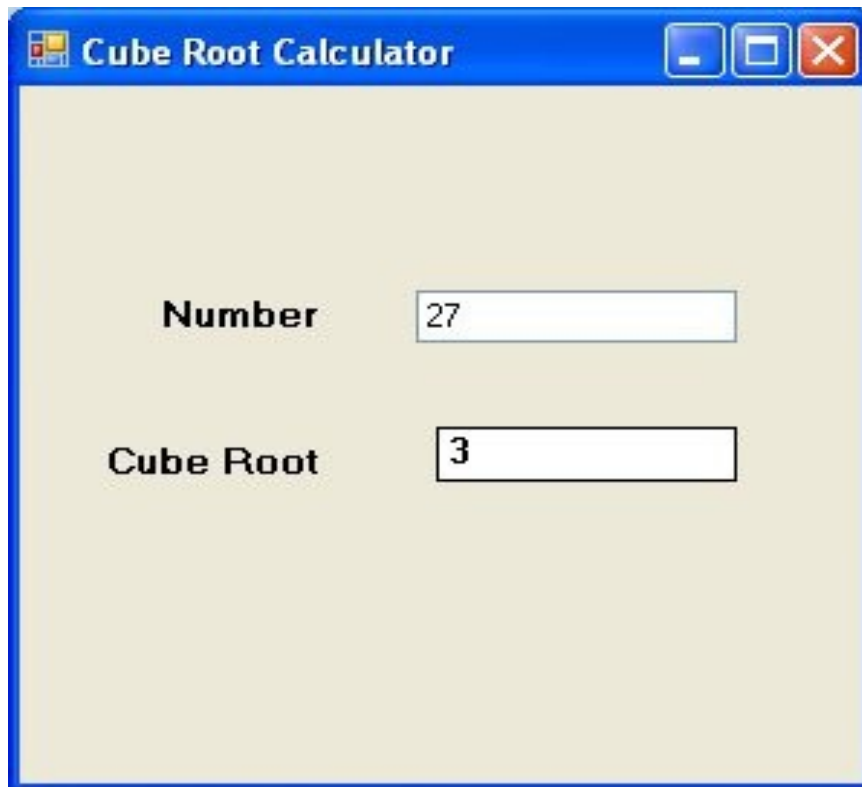**(8 Marks)**

c)

(5 Marks)

Question Eight

This program, will create a function that can convert mark to grade, a handy function to manage college examinations or tests processing. In this function, use the Select case control structure to convert marks of different range to different grades under the following conditions:

Mark >=80, grade `A'
Mark>= 70, grade `Bº
Mark>=60, grade `C'
Mark>=50, grade `D'
Mark>=40, grade `E'
Mark>=0, grade `F'
Mark >100 and Mark <0,'Invalid mark'

(20 Marks)

Question Nine

Write Visual Basic programs that draws the following shapes
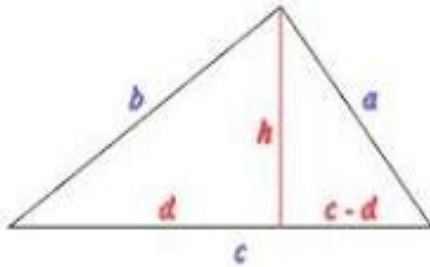a)

b)
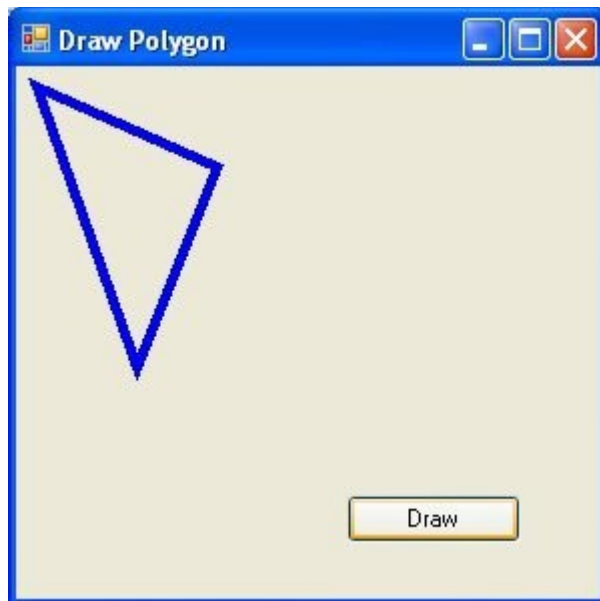
c)
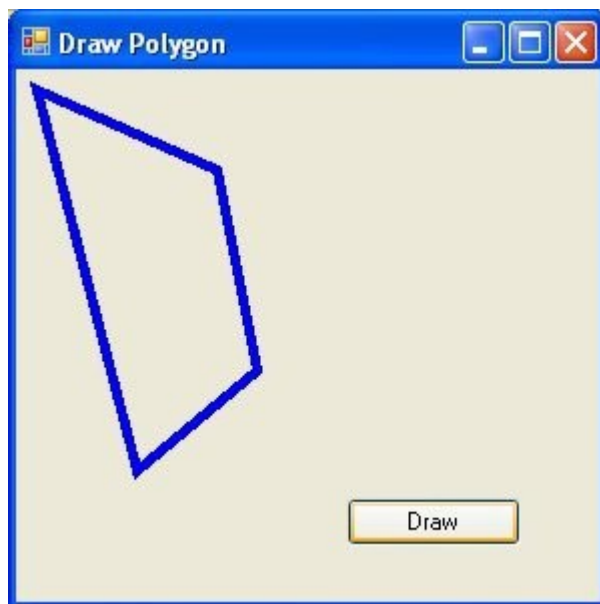
(20 Marks)

Question Ten

a) Write a Visual Basic program that calculates the roots of a quadratic equation
   expressed in the form $f(x): ax^2+bx+c =0$

b) Write a Visual Basic program that calculates the area of triangle with sides a,b,c as integers.
Hint use Heron's formula

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\text{where } s = \frac{1}{2}(a+b+c)$$

(10+10 Marks)

(1) The price of a plane ticket is 1000$ by default, but discounts are applied to it based on different criteria. The following rules determine the discount, and hence the final price:

- Students get 20% discount.

- People who purchase in 30 days in advance get 25% discount.

Discount can aggregate, for example a student purchasing 40 days in advance gets a 40% discount. You have to ask the user for input on whether they are a student. Draw a flowchart of your algorithm that solves the following problem and calculates the final price. [10 points