PYTHON TEST ONE; TEST DURATION: ONE HOUR

TOTAL MARKS (20 MARKS) EACH QUESTION CARRIES FIVE MARKS

Question One

In many jurisdictions a small deposit is added to drink containers to encourage people to recycle them. In one particular jurisdiction, drink containers holding one liter or less have a $0.10 deposit, and drink containers holding more than one liter have a $0.25 deposit. Write a program that reads the number of containers of each size from the user. Your program should continue by computing and displaying the refund that will be received for returning those containers. Format the output so that it includes a dollar sign and always displays exactly two decimal places.

Question Two

Write a program that begin by reading the cost of a meal ordered at a restaurant from the user. Then your program will compute the tax and tip for the meal. Use your local tax rate when computing the amount of tax owing. Compute the tip as 18 percent of the meal amount (without the tax). The output from your program should include the tax amount, the tip amount, and the grand total for the meal including both the tax and the tip. Format the output so that all of the values are displayed using two decimal places.

Question Three

Consider the software that runs on a self-checkout machine. One task that it must be able to perform is to determine how much change to provide when the shopper pays for a purchase with cash. Write a program that begins by reading a number of cents from the user as an integer. Then your program should compute and display the denominations of the coins that should be used to give that amount of change to the shopper. The change should be given using as few coins as possible. Assume that the machine is loaded with pennies, nickels, dimes, quarters, loonies and toonies.

NB: A one dollar coin was introduced in Canada in 1987. It is referred to as a loonie because one side of the coin has a loon (a type of bird) on it. The two dollar coin, referred to as a toonie, was introduced 9 years later. It's name is derived from the combination of the number two and the name of the loonie.

Question Four

When the wind blows in cold weather, the air feels even colder than it actually is because the movement of the air increases the rate of cooling for warm objects, like people. This effect is known as wind chill. In 2001, Canada, the United Kingdom and the United States adopted the following formula for computing the wind chill index. Within the formula Ta is the air temperature in degrees Celsius and V is the wind speed in kilometers per hour. A similar formula with different constant values can be used with temperatures in degrees Fahrenheit and wind speeds in miles per hour.

$$WCI = 13.12 + 0.6215T_a - 11.37V^{0.16} + 0.3965TaV^{0.16}$$

Write a program that begins by reading the air temperature and wind speed from the user. Once these values have been read your program should display the wind chill index rounded to the closest integer.

NB: The wind chill index is only considered valid for temperatures less than or equal to 10 degrees Celsius and wind speeds exceeding 4.8 kilometers per hour.