Questions for Pre-assessment of BMS353

Correct answers are in red
(*) denotes compulsory questions

1. (*)"The development and application of data driven mathematical modeling and computational simulation techniques to study of biological, behavioral, and social systems" is a definition of which discipline:

   Phycology

   Statistics

   Computational biology

   Computer Science

2. (*) A system composed of many parts that interact with each other in multiple ways is classified as "complex system". The interactions of these parts generate what can be defined as:

   Engineering

   Complexity

   Hard Systems

   Biological system

3. (*) The process of repeating items in a self-similar way, using infinite times a set of defined rules is defined as:

   Closed loop

   Recursion

   Impossible process

   Hard process

4. (*) An *equation* is like a statement that says: "this equals that"?

   True

   False

   Some times

   Only if there are letters

5. (*) In Mathematics a *function* is "a rule of correspondence between two sets such that there is exactly one element in the second set assigned to each element in the first set".

   False

   Only for integer values

   True

   Only for real values

6. (*) The *Euclidean distance* between two points is the length of the path connecting them. In the plane given the points A=(x_1,y_1) and B=(x_2,y_2), the Euclidean distance between them is d=sqrt($(x_2-x_1)^2+(y_2-y_1)^2$).
   The quantity d is:

   An equation

   A measure

   A variable

   A point in the plane

7. (*) A way of summarising discrete (qualitative or quantitative) data is by counting the number of observations falling into each category. A graphical representation of this summary is called:

   Pie Chart

   Histogram

   Graph Chart

   Scatter plot

8. (*) From the list below, choose ALL the descriptive statistics that are a measure of *location*:

Mean

p-value

Median

Mode

9. (*) From the list below, choose ALL the descriptive statistics that are a mesure of *dispersion:*

Range

Probability Distribution

Variance

Standard deviation

10. (*) The quantity that measures the average squared deviation of observations from their population mean, is also known as:

Quantile

Variance

Frequency

Mean

11. (*) How do you execute a command that you've just typed into the Jupyter notebook?

Press Enter

Press Shift and Enter

Press Alt and Enter

Click on another cell

12. (*) Which is the correct R command to find the square root of 2?

       sqrt[2]

       SQRT(2)

       sqrt(2)

       square_root(2)

13. (*) What is the correct R command to create a vector called *mydata* that contains the 8 values 3,5,6,7,2,10,4,2

       mydata = [3,5,6,7,2,10,4,2]

       mydata <- {3,5,6,7,2,10,4,2}

       mydata <- c{3,5,6,7,2,10,4,2}

       mydata <- c(3,5,6,7,2,10,4,2)

14. (*)What is the correct R command to extract the 1st element of the vector *mydata* and assign it to the variable called *elem1*?

       elem1 <- mydata[1]

       elem1 <- mydata[0]

       elem1 <- Mydata[1]

       elem1 <- mydata(1)

15. What is Jupyter notebook?

       A statistical software

       A web-based interactive computing platform

       The note from the first discovery of Jupiter

       A programming language

16. (*) In the Jupyter notebook, you can create 'Markdown Cells' that contain text, equations and images. What is the correct Markdown code to display the equation $x^2 + y^2 = 1$ (NOTE TO WEB CONTENT EDITOR - CAN YOU

RENDER THIS EQUATION AS TRADITIONAL MATHEMATICS PLEASE, WITH THE 2s AS SUPERSCRIPT?)

markdown(x^2 + y^2 = 1)

markdown[x^2 + y^2 = 1]

$x^2 + y^2 = 1$

$pow(x,2) + pow(y,2) = 1$