Q1 to Q9 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following can be considered as random variable?
a) The outcome from the roll of a die
b) The outcome of flip of a coin
c) The outcome of exam
d) All of the mentioned

2. Which of the following random variable that take on only a countable number of possibilities?
a) Discrete
b) Non Discrete
c) Continuous
d) All of the mentioned

3. Which of the following function is associated with a continuous random variable?
a) pdf
b) pmv
c) pmf
d) all of the mentioned

4. The expected value or _____ of a random variable is the center of its distribution.
a) mode
b) median
c) mean
d) bayesian inference

5. Which of the following of a random variable is not a measure of spread?
a) variance
b) standard deviation
c) empirical mean
d) all of the mentioned

6. The _____ of the Chi-squared distribution is twice the degrees of freedom.
a) variance
b) standard deviation
c) mode
d) none of the mentioned

7. The beta distribution is the default prior for parameters between _____
a) 0 and 10
b) 1 and 2
c) 0 and 1
d) None of the mentioned

8. Which of the following tool is used for constructing confidence intervals and calculating standard errors for difficult statistics?
a) baggyer
b) bootstrap
c) jacknife
d) none of the mentioned

9. Data that summarize all observations in a category are called _____ data.
a) frequency
b) <mark>summarized</mark>
c) raw
d) none of the mentioned

Q10and Q15 are subjective answer type questions, Answer them in your own words briefly.

10. What is the difference between a boxplot and histogram?
Ans:
Histograms are a special kind of bar graph that shows a bar for a range of data values instead of a single value. A box plot is a data display that draws a box over a number line to show the interquartile range of the data. The 'whiskers' of a box plot show the least and greatest values in the data set.

11. How to select metrics?
Ans:
- Good metrics are important to your company growth and objectives. Your key metrics should always be closely tied to your primary objective. ...
- Good metrics can be improved. Good metrics measure progress, which means there needs to be room for improvement. ...
- Good metrics inspire action

12. How do you assess the statistical significance of an insight?
Ans:
Steps in Testing for Statistical Significance
- State the Research Hypothesis.
- State the Null Hypothesis.
- Select a probability of error level (alpha level)
- Select and compute the test for statistical significance.
- Interpret the results.

13. Give examples of data that does not have a Gaussian distribution, nor log-normal.
Ans:
Exponential distributions do not have a log-normal distribution or a Gaussian distribution. In fact, any type of data that is categorical will not have these distributions as well.

Example: Duration of a phone car, time until the next earthquake, etc.

14. Give an example where the median is a better measure than the mean.
Ans:
The median better represents the central tendency for the skewed distribution. These data are based on the U.S. household income for 2006. **Income is the classic example of when to use the median instead of the mean because its distribution tends to be skewed.**

15. What is the Likelihood?
Ans:
The likelihood is **the probability that a particular outcome is observed when the true value of the parameter is, equivalent to the probability mass on**; it is not a probability density over the parameter. The likelihood, should not be confused with, which is the posterior probability of given the data.