Q1. What is a probability distribution, exactly? If the values are meant to be random, how can you predict them at all?

Ans A probability distribution describes how a random variable is distributed; it tells us which values a random variable is most likely to take on and which values are less likely. Based on the previous data and the occurences of the random event, we can predict the outcome in terms of probabilities.

Q2. Is there a distinction between true random numbers and pseudo-random numbers, if there is one? Why are the latter considered “good enough”?

Ans. True random numbers are those randomly generated numbers from some kind of pysical phenomenon. The outputs of these true random numbers cannot be determined, even if their internal structure and response history are known.

While, the Pseudo-random numbers are generated by using some sort of algorithms and the sequences of these numbers are completly predictable.

Q3. What are the two main factors that influence the behaviour of a "normal" probability distribution?

Ans A normal distribution is determined by two parameters the mean and the variance(or standard deviation).

A normal distribution with a mean of 0 and a standard deviation of 1 is called a standard normal distribution.

Q4. Provide a real-life example of a normal distribution.

Ans Height of all the people

Age of all the people around the world

A fair rolling of dice is also a good example of normal distribution.

Playing Cards. There is a probability of getting a desired card when we randomly pick one out of 52

Q5. In the short term, how can you expect a probability distribution to behave? What do you think will happen as the number of trials grows?

Ans lets take an example of a dice throws twice and we gather the probability of getting all the numbers from 1 to 6 in both the trials. We do the pairing and then we find the average and with these average we will find put the probability of occurrence of the mean number. If we plot this using histogram we find that it is normally distributed. This is refer to the probability distribution.As the number of trials increases, there will no impact on the shape of the curve because at any how the probability of occurrence of an event wil lie between 0 and 1. Moreover, the graph will be wider based on the interval range.

Q6. What kind of object can be shuffled by using random.shuffle?

Ans Those class objects which are mutable in nature those will be shuffled by using random.shuffle. Example: List of items

Q7. Describe the math package's general categories of functions.

Ans The general categories of math package are

1) Trigonometric functions

2)Quadratic functions

3)Exponential functions

4)Hyperbolic functions

5)Periodic functions

6)Arithmetic functions

7)Logarithimic functions

8)Conversions to Integer

Q8. What is the relationship between exponentiation and logarithms?

Ans The exponential function is given by ƒ(x) = ex, whereas the logarithmic function is given by

g(x) = ln x, and former is the inverse of the latter.

Q9. What are the three logarithmic functions that Python supports?

Ans log2(x) - logarithmic value of x to base 2

2)log10(x) - logarithmic value of x to base 10

3)log(x,base) - logarithmic value of x to base. If only first parameter is given , it computes its

value tp base e,natural logarithm

4)log1p(x) - natural logarithm (base e) value of 1+x