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 shows the data points and their likelihood of occurrence within a given range. We take different factors into account for probability distribution such as mean, standard deviation.**

**The different types of probability distribution are Normal distribution, Standard Normal distribution, Log distribution, Binomial Distribution.**

**Individual random events are unpredictable but if the probability distribution is known, the frequency of different outcomes over repeated events is predictable.**

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: **Pseudo-random numbers are produced by an algorithm that generates a series of bits that appear to be unpredictable but in true random numbers a series of bits are unpredictable. The pseudo random number generator are considered good enough due to its advantages of fast generation, repeatability and less memory.**

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

Ans: **Mean and standard deviation influences the behaviour of Normal distribution. Mean is the measure of central tendency which shows the central location of the data and Std deviation is the measure of dispersion which shows the spread of the data or height and width of the graph.**

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

Ans: **Income Distribution in Economy**: the middle-class population gets the avg salary and a bit higher in the overall population. There are equally poor and rich people both side of the mean showing a bell curve distribution.

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: **specifically, Binomial distribution can change as the number of trails grow as the number of trails are taken into account in this distribution.**

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

Ans: **Random shuffle can shuffle a list, tuple and string**

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

Ans: **Math packaged is a built in package which has a lot of built in functions. Some of the math functions in the math module are below:**

Graphical user interface, text, application, email

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Q8. What is the relationship between exponentiation and logarithms?

Ans: **log functions are the inverses of exponential functions.**

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

Ans: **Following are the log functions supported by the Python Math function.**

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