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

Probability distribution means giving the probabilities of occurrences of events.

Even if the values are random but the work of probability distribution function is to predict the probability of the specified occurrence not the exact value.

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

The random numbers are unpredictable to any number while the pseudo random numbers uses a mathematical calculation to give the result. They are considered good enough because the number that is a result of mathematical calculation is bound to give better result than the number which is completely random.

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

The two of the major factors that affects the normal probability distribution are Mean and Standard deviation

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

The one real life example of the normal distribution is JEE test. Here, on an average students will score B, While a small number of students will score A and small number will score C

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?

In short term the probability distribution function will favour the large or extreme values more. As the number of trials grows the probability distribution will average itself.

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

random.shuffle can shuffle a list, string and a tuple

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

Some functions are:

1. Log
2. Cos
3. Factorial

Etc.

Q8. What is the relationship between exponentiation and logarithms?

Both are inverse of each other.

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

1. Log 🡪 log with base e
2. Log2 🡪 log with base 2
3. Log10 🡪 log with base 10