**Statistics**

**Question: 1**  
What is the meaning of six sigma in statistics? Give proper example

**Answer:**

Six Sigma in statistics is a method to improve quality and reduce defects in processes. It aims to make processes so efficient that they produce only about 3.4 defects per million opportunities.

For example, if a company produces widgets, Six Sigma ensures that nearly every widget meets quality standards. It achieves this by using data to identify and fix problems in the production process. In simple terms, Six Sigma helps companies make better products with fewer mistakes.

**Question: 2**  
What type of data does not have a log-normal distribution or a Gaussian distribution? Give proper example

**Answer:**

The type of data that doesn't follow a log-normal or Gaussian distribution is called non-normally distributed data. This kind of data doesn't form a bell-shaped curve like the Gaussian distribution.

For example, think about the number of rainy days in a month or the number of cars passing through a street in a day. These don't fit into a bell curve pattern, so they're non-normally distributed data.

**Question: 3**  
What is the meaning of the five-number summary in Statistics? Give proper example

**Answer:**

The five-number summary in statistics provides a quick snapshot of a dataset's key characteristics. It includes the smallest value, the first quartile (25th percentile), the median (50th percentile), the third quartile (75th percentile), and the largest value.

For instance, if we have a dataset of test scores: [60, 70, 75, 80, 85, 90, 95, 100], the fivenumber summary would be: Minimum: 60, Q1: 72.5, Median: 82.5, Q3: 92.5, Maximum: 100.

**Deep Learning**

**Question: 1**  
**(a)** Explain how you can implement DL in a real-world application.

Answer:

Implementing Deep Learning (DL) in a real-world application involves understanding the problem we want to solve and collecting relevant data. Once we have the data,we have to choose a suitable DL model and train it using the collected data. Evaluate the model's performance and integrate it into the application. Finally, monitor the model's performance and make updates as needed to ensure its effectiveness over time.

**(b)** What is the use of Activation function in Artificial Neural Networks? What would be the problem if we don't use it in ANN networks.

**Answer:**

Activation functions in Artificial Neural Networks (ANNs) add flexibility and power to the model by introducing non-linearities. Without them, ANNs would only be able to learn linear relationships, severely limiting their ability to handle complex data patterns. Activation functions help ANNs learn and represent complex patterns in data, making them essential for effective learning and modeling in neural networks. In simpler terms, activation functions enable neural networks to understand and learn from more complex data, enhancing their ability to solve real-world problems.