**Part 1: Fundamentals of Visualization**

**1.(a)** Clarity refers to how easily and accurately information can be understood and interpreted by the audience. Precision refers to details and accuracy of the presentation. Efficiency refers to deliverance of information quickly and effectively. It leads to understanding of insights with minimal effort.

**(b)**  A bar chart representing monthly sales performance of some top products. It becomes very challenging to view every bar, so it is better to change the graph to something else, like representing the data in a 3D form.

**2. (a)** Sometimes it becomes difficult to organize data in an effective manner. The data present is in raw and scattered form. To understand it effectively, and expressing the facts in simplified manner, data visualization is used.

**Part 2: Visual Encoding and Perception**

**3.** Exploratory Visualization is analysis for reasoning and finding patterns, while Explanatory Visualization is for conveying the information to others for persuasion and collaboration.

**(a)** If I would want to find out the relation between the churn rates in a company with respect to the age of the employees. The goal would be to discover hidden patterns and some common things underlying in the data.

**(b)** Communication of impact of a new marketing campaign on sales data to a team of executives, to communicate its significance and effectiveness, highlighting key trends.

**4.(a)** Position on a shared scale, as differences and patterns could be recognized effectively.

**(b)** For showing distinct categories, as in three-variable distribution. Using identity channels for showcasing data about each type of vehicles.

**5.** Expressiveness is showing the data and only the facts relevant. Effectiveness of visualization if the characteristic of getting more easily perceived to a person seeing the data.

**Part 3: Narrative, Color and Design**

**6.** The chart seen here is a Rose Chart, showing the scale of preventive deaths from infectious diseases.. It is a two-variable distribution, effectively showing the purpose of the graph.

**(b)** Main cause of deaths was not war wounds but unsanitary conditions.

**(c)**  The diagram used colors and areas to show the proportion of deaths due to distinct causes. It made the data to be understood easily. This chart laid emphasis on the prevention of diseases.

**7.(a)** Qualitative is used for data with no inherent ordering. Number of sales for different product categories. Sequential is used for numeric data or data having a natural ordering. Visualizing temperature changes in a day. Diverging is used for data separating from a center value. Difference between predicted and actual sales.

**(b)**  For ensuring the accessibility of information to everyone. One strategy to use is applying the principle of high contrast colors for better visibility.

**8.** Asking about target audience (knowledge and expertise), message to show to them (message, variables and relationships between them) and intention to show it (appropriate visualization type).

**Part 4: Dynamic Visualization and Creative Coding**

**9.(a)** It allows for enhanced exploration and discovery of data, broadens multi-dimensional analysis, real-time Monitoring and Analysis. It also provides adaptability, flexibility and improved decision-making for seeing data.

**(b)** Filtering is removal of unnecessary data which is hindering the predictions and patterns, and which cannot be true. It allows to have a clear understanding of the patterns given, making easy and valuable predictions and understanding the concepts of data effectively by the patterns hidden in the datasets.

**10.(a)** It allows for a creation of data visualization, which is expressive and shows a great depth of data. It combines programming techniques with artistic expression for interactive digital experiences and data visualization

**(b)** The visualization seems compelling, with the aesthetics embedded in it. It provides an entertaining experience and gives valuable insights in a simple and easy manner. It allows for easy interpretation of data with active user interaction.