

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 3174301

Date: 26/05/2026

Subject Name: Data Visualization and Modeling

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

- Q.1** (a) Define data visualization. **03**
(b) Explain different applications of data visualization. **04**
(c) State similarities and difference between Python and JavaScript. **07**
- Q.2** (a) Explain Components of Matplotlib Figure. **03**
(b) Explain Key Features of Matplotlib. **04**
(c) Write a code to Creating a horizontal bar chart using Matplotlib. **07**
- OR
- Q.2** (c) Write a code to Creating a vertical bar chart using Matplotlib. **07**
- Q.3** (a) List and discuss different components of Power BI. **03**
(b) Explain different types of views available in Power BI Desktop. **04**
(c) Draw and Explain Power BI architecture. **07**
- OR
- Q.3** (a) Explain Features of DAX. **03**
(b) Explain DAX Text Functions. **04**
(c) Write a code for Scatter plot using Seaborn in Python. **07**
Use following sample data.
data = { 'height': [150, 160, 170, 180, 190],
 'weight': [50, 65, 70, 80, 95],
 'gender': ['Male', 'Female', 'Male', 'Female', 'Male']
 }
- Q.4** (a) Explain Importance of Word Cloud Charts in Data Visualizations. **03**
(b) Write down code for spatial visualizations and analysis in Python with Folium. **04**
(c) Explain common use cases of waffle charts in data analysis. **07**
- OR
- Q.4** (a) Explain importance of Waffle Charts in data Visualizations. **03**
(b) Write a code for Plotting Google Map using folium package. **04**
(c) Write code snippets for creating waffle charts in Python. **07**
- Q.5** (a) Define Pyplot. **03**

- (b) Write similarities and differences between Matplotlib and Seaborn. **04**
- (c) Write a code to draw a line chart using matplotlib. **07**
Show marker, linestyle, Titles, axis labels and grid.
Consider the following data.
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May']
sales = [100, 150, 120, 180, 160]

OR

- Q.5** (a) What is Data modeling? What are its advantages in Power BI? **03**
- (b) Explain the importance of heatmap charts in data visualization. **04**
- (c) Write a code to draw a customized pie chart with matplotlib including features such as exploded slices, colors, shadows, title, axis and a legend. **07**
Consider the following data
departments = ['Sales', 'IT', 'HR', 'Marketing']
percentages = [35, 25, 20, 20]
