

Data Analytics (315326)

MSBTE Diploma · K-Scheme · Model Question Paper — Set A

Time: 3 Hours**Max. Marks: 70****Instructions:**

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Define Data Analytics. State any two of its applications.
- b) Define skewness. Name its types.
- c) State the Central Limit Theorem. What sample size is generally considered large enough for it?
- d) What is a slicer in a PivotTable? State its use.
- e) What is an embedded chart in Excel?
- f) State the use of *plt.xlabel()* and *plt.ylabel()* functions in Matplotlib.
- g) Name any two file formats in which a Matplotlib plot can be saved. Name the function used.

Q.2 Attempt any THREE of the following:**12**

- a) Explain the life cycle of Data Analytics with a neat diagram.
- b) Draw a box plot for the following data and write its five-number summary: 8, 14, 11, 20, 17, 25, 13, 16, 19
- c) Explain the four types of data analytics with suitable examples.
- d) State the purpose of exploding a slice of a pie chart. Write the steps to explode a slice in Excel.

Q.3 Attempt any THREE of the following:**12**

- a) Explain correlation. Describe positive, negative and zero correlation with scatter diagrams.
- b) Write the steps to create a PivotTable in Excel to show the total sales amount of each region product-wise.
- c) Explain the steps to install Matplotlib and check that it is installed. List any four plots supported by it.

- d) Calculate the variance and standard deviation of the following data: 4, 8, 6, 5, 3, 7, 9

Q.4 Attempt any THREE of the following:

12

- Explain normal distribution. State its properties with a neat curve.
- Explain how to change the chart type of an existing chart and how to move its legend in Excel.
- What is kurtosis? Explain its three types with a neat diagram.
- Write a Python program to draw a line chart of the average monthly temperature of two cities (January to June). Add title, axis labels and legend.
- Explain the sampling funnel with a neat diagram.

Q.5 Attempt any TWO of the following:

12

- Marks obtained by 11 students in a class test are: 12, 15, 18, 15, 20, 22, 15, 25, 18, 30, 16. Calculate mean, median, mode and Karl Pearson's coefficient of skewness. Comment on the result.
- A survey of 200 students was done to check whether area of residence is associated with the device used for online study:

Area	Laptop	Mobile	Desktop	Total
Urban	30	50	20	100
Rural	15	70	15	100
Total	45	120	35	200

Calculate the Chi-square statistic and test the association at 5% level of significance. (Critical value of χ^2 for 2 d.f. at 5% = 5.991)

- Write a Python program to draw a grouped bar chart comparing the sales of five products in the years 2024 and 2025. Add title, axis labels and legend, and save the chart in PNG and PDF formats.

Q.6 Attempt any TWO of the following:

12

- Describe the steps to make an Excel dashboard. Draw a neat sketch showing the different elements of a dashboard.
- The amount spent on advertising (x, ₹ thousand) and sales (y, ₹ lakh) of a shop are given below. Calculate Karl Pearson's coefficient of correlation and fit the regression line of y on x. Estimate sales when advertising is ₹ 12 thousand.

x	2	4	6	8	10
y	15	25	30	40	50

- For the following sales data, write the steps to create a PivotTable that groups the dates by month and a Pivot Chart that compares the regions month-wise. Show the resulting PivotTable and chart.

Date	Region	Product	Amount (₹)
05-01-2025	East	Laptop	45000
12-01-2025	West	Mobile	18000
20-01-2025	East	Mobile	15000
03-02-2025	West	Laptop	52000
14-02-2025	East	Laptop	48000
25-02-2025	West	Mobile	21000
08-03-2025	East	Mobile	17000
19-03-2025	West	Laptop	50000

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in