

Data Analytics (315326)

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

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) State any four reasons why data analytics is important for an organisation.
- b) Define kurtosis. Name its types.
- c) List the four levels (scales) of measurement of data with one example each.
- d) Define Pivot Chart.
- e) Why is a slice of a pie chart exploded?
- f) State the use of `plt.legend()` in Matplotlib. Write its syntax.
- g) Define outlier. State one method to detect it.

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

- a) Draw a neat diagram of the Data Analytics life cycle and explain each phase in brief.
- b) Explain the Central Limit Theorem with a suitable example.
- c) Explain how to sort a PivotTable in descending order of total amount and how to filter it to show only selected items.
- d) Explain with an example how to create a chart from non-adjacent cells in Excel.

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

- a) Differentiate between predictive analytics and prescriptive analytics. (Any four points)
- b) What is data imputation? Explain any three techniques of handling missing values.
- c) What is Matplotlib? Explain its role in data visualization and list any four types of plots.
- d) Calculate the coefficient of quartile deviation and the coefficient of mean deviation (about mean) for: 10, 14, 18, 20, 24, 30, 31

Q.4 Attempt any THREE of the following:

12

- a) Calculate Spearman's rank correlation coefficient for the marks of six students in two subjects:

Maths (x)	65	72	58	80	69	75
Science (y)	70	68	60	85	72	78

- b) The probability that a student passes an exam is 0.6. If 5 students appear, find the probability that i) exactly 3 pass ii) at least 4 pass.
- c) Describe the role of a dashboard in Excel. List its main components.
- d) Write a Python program to draw a histogram of the ages of 30 employees using class intervals 20–30, 30–40, 40–50 and 50–60. Add title and axis labels.
- e) Write the steps to move an embedded chart to a separate chart sheet and to resize an embedded chart.

Q.5 Attempt any TWO of the following:

12

- a) Daily orders received by a shop on 11 days are: 18, 45, 22, 27, 25, 30, 21, 28, 24, 26, 33. i) Use the interquartile range (IQR) method to find outliers, if any. ii) Draw a box plot and mark the outlier.
- b) Explain confidence interval and sampling variation. A random sample of 36 students has mean marks 64. The population standard deviation is 12. Find the 95% confidence interval for the population mean. ($z = 1.96$)
- c) Write a Python program to draw a pie chart of monthly expenses (Rent 8000, Food 6000, Travel 2000, Education 3000, Savings 1000) showing percentages. Explode the largest slice and save the chart in SVG format.

Q.6 Attempt any TWO of the following:

12

- a) Find the correlation coefficient and the regression line of y on x for the data below. Estimate y when $x = 10$.

Study hours (x)	3	5	6	8	9	11
Marks (y)	40	48	55	60	66	73

- b) Write the stepwise procedure to create a PivotTable that shows product-wise and region-wise total amount for the following data. Show the resulting PivotTable.

Product	Region	Amount
Pen drive	Pune	12000
Mouse	Pune	8000
Keyboard	Pune	15000
Pen drive	Nashik	9000
Mouse	Nashik	6500
Keyboard	Nashik	11000

Pen drive	Nagpur	14000
Mouse	Nagpur	7000
Keyboard	Nagpur	9500
Mouse	Pune	4000

- c) Write a Python program to draw a bar chart comparing average marks of Division A and Division B in five subjects. Use title, axis labels, legend, custom tick labels and y-axis limits 0–100. Explain each function used.

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