

Plot No. 2, Knowledge Park-III, Greater Noida (U.P.) –201306

**POST GRADUATE DIPLOMA IN MANAGEMENT (2022-24)**  
**END TERM EXAMINATION (TERM -III)**

Subject Name: **Data Modelling**

Time: **02.00 hrs**

Sub. Code: **PGIT31**

Max Marks: **40**

**Note:**

**1. All questions are compulsory. Section A carries 5 marks: 5 questions of 1 mark each, Section B carries 21 marks having 3 questions (with internal choice question in each) of 7 marks each and Section C carries 14 marks one Case Study having 2 questions of 7 marks each.**

**2. All questions are to be solved using MS-Excel on an individual Computer/LAPTOP.**

**b. EACH AND EVERY QUESTION NEEDS TO BE SOLVED ON THE DEFINED INDIVIDUAL WORKSHEET. Each sheet is renamed with the Question numbers.**

**5. Student are supposed to save the file using his/her full name and Admission No/Roll Number and section: example (amritajain\_PGDM22123\_A).**

**CO1-** Understanding and apply Data Modelling techniques for decision-making in business.

**CO2-** Apply knowledge of Predictive and time series data models in business.

**CO3-** Analyze the data models for validity and feasibility in business.

**CO4-** Evaluate data models to solve business problems.

**SECTION – A**

Attempt all questions. All questions are compulsory.

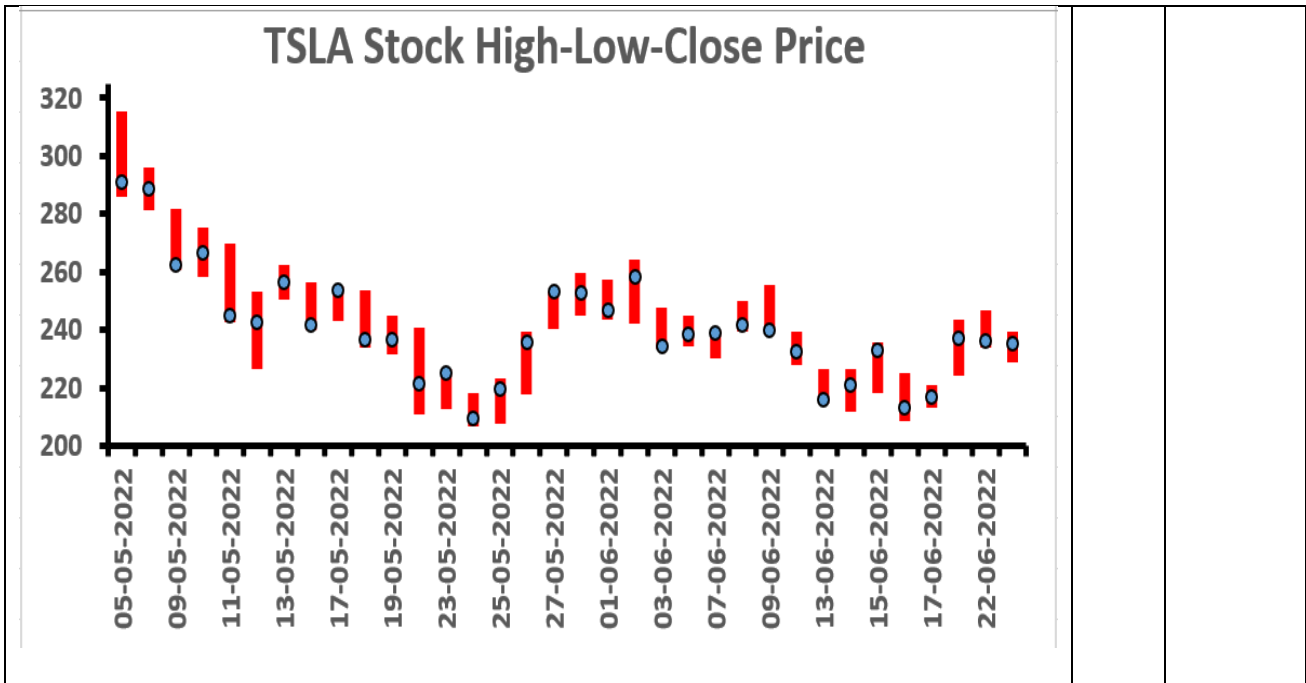
**1×5 = 5 Marks**

<b>Questions</b>	<b>CO</b>	<b>Bloom's Level</b>
<p><b>Q. 1: (A).</b> Suppose Zensor Technologies Ltd. has the mentioned revenue and growth rate. Calculate average annual growth rate of the company's revenue over the past 5 years by using geometric mean in cell C9.</p> <p><b>Q. 1: (B).</b> Suppose a stock's price has been trading between \$20 and \$30 per share for the past five years. The majority of trades occur at around \$25 per share, with a few trades happening at higher or lower prices. However, in Year 2018, due to a positive announcement about the company's earnings, the stock experiences a sudden surge in demand and trades as high as \$80 per share for a brief period. Calculate mean and median. Interpret the effect of outliers in the distribution. Find whether the distribution is positively skewed or negatively skewed.</p> <p><b>Q. 1: (C).</b> A company's sales data over a period of 5 years is given. The data includes the company's sales revenue for each year. Calculate slope and intercept by using excel functions.</p> <p><b>Q. 1: (D).</b> A company wants to investigate if there is a correlation between their advertising spend and sales revenue. They have recorded the monthly advertising spend and sales revenue for the past six months in Excel. Calculate the correlation coefficient between the advertising spend and sales revenue, and interpret the results.</p> <p><b>Q. 1: (E).</b> A small retail store wants to determine the highest daily sales they have made in a given week. They have recorded their daily sales for few weeks in a column in Excel. Find on which weekday, the sales was maximum.</p>	CO1	L3

**SECTION – B**

All questions are compulsory (Each question have an internal choice. Attempt any one (either A or B) from the internal choice) **7 x 3 = 21 Marks**

Questions	CO	Bloom's Level
<p><b>Q. 2: (A).</b> Suppose a company sells a product for \$100, and the management wants to determine the optimal price point for maximizing profits. They have cost and sales data for their product given in excel file. Calculate Total revenue, Total Variable Cost, Total Costs and Total profit. Now, suppose the company wants to see what would happen to their profit if they raised the price per unit to \$120 or lowered it to \$80, using what-if analysis Data Table in Excel</p> <p style="text-align: center;"><b>Or</b></p> <p><b>Q. 2: (B).</b> A retail company wants to analyze the impact of changing the prices of its products on its profit margin. The company has a product line consisting of four items with different prices and profit margins, as shown in the table. By using scenario manager, create different scenarios: one where company increases the price of all products by 10%, one where company decreases the price of all products by 5%, and one where company keeps the prices the same. Compare the impact of each scenario on its profit margin.</p>	CO2	L4
<p><b>Q. 3: (A).</b> Fenesta Glass Doors Co. manufactures two products:</p> <ul style="list-style-type: none"> <li>• An 8-foot glass door with aluminium framing.</li> <li>• A 4-foot 6-foot double-hung, wood-framed window</li> </ul> <p>Which combination of production rates (the number of units produced per week) for the two products would maximize the total profit from both of them meeting all constraints?</p> <p style="text-align: center;"><b>Or</b></p> <p><b>Q. 3: (B).</b> A company's average Gross Revenue, Production Cost, Marketing Cost and Payroll Cost and their standard deviations are given. Create the first simulation by using NORMINV() excel function and calculate Net Profit. By running the simulation multiple times (1000 iterations), obtain a range of possible net profits and their associated probabilities of occurrence, to help the decision-maker to make more informed decisions and mitigate risks.</p>	CO3	L4
<p><b>Q. 4: (A).</b> A company wants to analyze its sales data to identify trends and make predictions for future sales. They have monthly sales data for the past 36 months. Find a three-year moving average to smooth out the fluctuations in the data and identify trends. Draw one scatter plot of sales and another scatter plot for 3-year moving average. Check whether the fluctuations are smoothed out or not.</p> <p style="text-align: center;"><b>Or</b></p> <p><b>Q. 4: (B).</b> Suppose you are a financial analyst at a brokerage firm, and you have been tasked with analyzing the performance of TSLA stock for the period of 5<sup>th</sup> May 2022 to 22<sup>nd</sup> June 2022. In order to do so, stock data on the high, low, and closing prices for each trading day during that period has been given. Create a high-low-close stock chart. Customize the chart to display same as it is shown in image.</p>	CO3	L5



**SECTION – C**

Read the case and answer the questions

**7×02 = 14 Marks**

Questions	CO	Bloom's Level
<p><b>Q. 5: Case Study:</b> Royal Hut Cafe is a popular restaurant known for its delicious Chili Chaap. The restaurant has been in business for the past two years and has collected data on the price of the Chili Chaap and the corresponding demand for each month. The data set includes the price of the Chili Chaap and the number of orders received for each month for the past few years. The restaurant wants to use this data to predict the demand for the Chili Chaap for the upcoming months.</p> <p><b>Questions:</b></p> <p><b>Q. 5: (A).</b> Build the regression model to predict the demand for the upcoming months. Draw a scatter plot between Chili Chaap and actual demand. Draw the trend line showing the equation on plot. With the help of regression equation or residuals, write the predicted Chili Chaap sales in column C.</p> <p><b>Q. 5: (B).</b> Interpret the regression summary output with reference to this case.</p>	CO4	L5

**Kindly fill the total marks allocated to each CO's in the table below:**

COs	Marks Allocated
CO1	5 Marks
CO2	7 Marks
CO3	14 Marks
CO4	14 Marks