JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA
PGDM / PGDM (M) / PGDM (SM)
FOURTH TRIMESTER (Batch 2023-25)
END TERM EXAMINATIONS, SEPTEMBER 2024

Course Name	MARKETING ANALYTICS	Course Code	X0125 (113)
Max. Time	**2 hours**	Max. Marks	**40 MM**

INSTRUCTIONS:
a. Solve the questions (given to you in soft copy of word document) in excel sheet
b. Submit your answers in hard copy/ answer sheet provided to you.

Question 1:

You are a data analyst for an automobile company aiming to predict fuel efficiency (mpg) based on various vehicle characteristics. Using the famous "Motors" dataset **provided in excel sheet 1,** perform a multiple linear regression analysis where fuel efficiency (mpg) is the dependent variable. The independent variables are engine displacement (disp), number of cylinders (cyl), horsepower (HP), vehicle weight (wt), and acceleration (accel). Analyze the data you have gathered and draw interpretations, evaluating the relationships between variables to form evidence-based conclusions.

(10 marks)

Question 2:

In a recent study, researchers aim to understand how different combinations of food and condiments affect individuals' overall enjoyment. This type of analysis is important for restaurants and food companies, as it helps tailor menus to consumer preferences, ultimately enhancing customer satisfaction. To explore these relationships, statistical techniques like two-factor ANOVA and linear regression are applied to determine how food types and condiments, both independently and interactively, influence enjoyment. You are tasked with analyzing the impact of Food Type and Condiment on Enjoyment levels using both two-factor ANOVA and linear regression. The variables (sheet 2) are defined as follows:

Enjoyment: The dependent variable (measured on a numerical scale).

Food Type: A categorical variable (e.g., different types of food like burgers, ice-cream).

Condiment: A categorical variable (e.g., ketchup, mustard, or mayonnaise)

a.   Analyze the main effects of food type and condiment on enjoyment. How do these factors individually influence enjoyment levels? (5 marks)

b. Evaluate the presence of any significant interaction effects (ANOVA) between food type and condiment. Do these two variables interact to influence enjoyment differently when combined, and how can this interaction be interpreted statistically? (5 marks)

c. Assess how food types and condiments individually contribute to predicting enjoyment levels. What does the data reveal about the influence of each variable on enjoyment? (5 marks)

d. Interpret the regression coefficients for each food type and condiment, analyzing what they indicate about the strength and direction of the relationship between these variables and enjoyment levels. What conclusions can be drawn from these coefficients? (5 marks)

Question 3:

Conjoint analysis is a powerful statistical technique used to understand consumer preferences by evaluating the trade-offs they make when choosing between products with various attributes. Businesses often use this method to design products that align with consumer priorities. By presenting respondents with different product profiles, each with varying combinations of attributes such as brand, packaging, price, and calories, marketers can determine which features are most valued. This data helps in product development, pricing strategies, and promotional campaigns. Using the provided **Excel sheet 3** containing the following product attributes — **Profile, Brand, Packaging, Calories per oz, Price per oz, and Rank** — conduct a conjoint analysis to assess how each of these variables impacts the product rankings.

a. Analyze the data to determine the relative importance of each attribute (Brand, Packaging, Calories, Price) in influencing consumer preferences. (5 marks)

b. Which attribute has the greatest impact on the product ranking? Arrange the attributes in descending order of their impact. (5 marks)