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**JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA**

**PGDM / PGDM (M) / PGDM (SM)**

**THIRD TRIMESTER (BATCH 2023-25)**

**ENDTERM EXAMINATION, JULY 2024**

**Reappear**

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| Course Name | Python for Business Analytics | Course code | 20822 |
| Max Time | 2 hours | Max. marks | 40 |

**INSTRUCTIONS:**

a. Attempt all the questions on a single Jupyter Notebook

b. The data for the case is available on Moodle.

c. Write down your Roll no., course name and course code on top of Jupyter Notebook

d. Save your Jupyter notebook with .ipynb extension and as pdf file

e. Upload both the files on Moodle.

f. Label the files as PBA\_roll no (for example: PBA\_23)

g. This is an open moodle exam. Students may refer to the codes uploaded on moodle.

"Dine & Delight" is a bustling restaurant located in the heart of a vibrant city. Known for its delectable cuisine and inviting ambiance, the restaurant attracts a diverse clientele seeking exceptional dining experiences. To further elevate its service quality and optimize revenue generation, "Dine & Delight" meticulously records each transaction, capturing key parameters such as total bill, tip, guest demographics, and dining preferences.

**Introduction:** As the owner of "Dine & Delight," you recognize the significance of leveraging data-driven insights to enhance operational efficiency and customer satisfaction. By analyzing the rich dataset comprising transactional records from Thursday through Sunday, you aim to uncover actionable insights that will drive strategic decision-making and foster sustainable growth.

**Analyze the data and write the answers to the following questions:**

1. Import the dataset. What is the total amount of tips received on each day of the week? **(3 marks)**
2. Summarise the transactions for each combination of day and time (lunch or dinner)? Which day of the week had the highest average tip amount? **(4 marks)**
3. Detect the presence of outliers for "Total Bill" and "Tip" **(3 marks)**
4. Prepare the Frequency Table and Bar Chart for "Size". Summarize and explain your findings. **(3 marks)**
5. Explore if there is any dependency between the variable "Tip" and rest of the variables **(5 marks)**
6. Which party size tended to give the highest average tip amount? **(2 marks)**
7. Which day of the week had the highest average tip percentage (tip amount divided by total bill amount)? **(3 marks)**
8. How does the distribution of total bill amounts vary between smokers and non-smokers? **(3 marks)**
9. What are the trends in the average total bill and average tips during different times of the day (Lunch vs. Dinner)? **(3 marks)**
10. Does the smoker status affect the tip percentage given by customers? **(3 marks)**
11. What percentage of total bills are over $50? What is the smallest tip given on a Thursday? Estimate the standard deviation of total bills on Friday? **(4 marks)**
12. Estimate the three largest tips given on a Sunday? What is the standard deviation of tips on weekends (Saturday and Sunday) compared to weekdays (Thursday and Friday)? What are the maximum and minimum bills recorded for each day of the week? **(4 marks)**

**Note:** Interpretation of all the outputs should be written by putting comments on the Jupyter notebook.