JAIPURIA INSTITUTE OF MANAGEMENT
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JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM / PGDM (M) / PGDM (SM)

THIRD TRIMESTER (Batch 2024-26)

END TERM EXAMINATIONS, APRIL 2025

MAIN EXAM -SET A

Course Name	**Python for Business Analytics(PBA)**	Course Code	**20822**
Max. Time	**2 hours**	Max. Marks	**40 MM**

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 a html 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 code exam. Students may refer to the codes uploaded on moodle.

Read the case below and answer the questions given by analyzing the data using Python.

BeanScene Café, a popular coffee shop chain, has grown steadily over the years, serving a wide range of beverages and quick bites across multiple locations. Known for its cozy ambience and customer-first service, BeanScene now aims to strengthen its competitive position by embracing business analytics to better understand customer preferences and purchasing behaviour.
To support this transition, BeanScene's data science team has compiled a rich dataset of customer transactions over the past year. The data has been recorded on the following variables

Variable name	**Description**
Transaction Id	A unique identifier for each transaction
Item	The name of the item purchased
Quantity	The quantity of the item purchased.
Price per unit	The price of a single unit of the item
Total spent	The total amount spent on the transaction.
Payment Method	The method of payment used.
Location	The location where the transaction occurred.
Transaction date	The date of the transaction

While the dataset presents a valuable opportunity, the management team is looking to extract meaningful insights from this raw information. The aim is to analyze trends in sales volume, high-performing menu items, peak days, preferred payment modes, and location-wise performance. These insights will help **BeanScene** craft data-driven strategies to optimize inventory, enhance customer experience, and boost overall revenue across its café network.

.Analyze the data and write the answers of the following questions:

1. Import the data file. What is the dimension of the imported data **(2 marks)**
2. Identify the numeric and categorical variables. Does there exist any missing values in the data. Comment upon those variables. **(2 marks)**

3. Identify the variables with missing values in the data. Apply the appropriate measures to deal with the missing values in different variables in the data. (**10 marks**)
4. Which payment method is preferred? How does the average amount spent vary based on the payment method used? **(4 marks)**
5. Measure average quantity sold for Sandwich across different locations? **(3 marks)**
6. Which item has the highest sales and lowest sales? **(3 marks)**
7. Analyse the monthly trend of sales? **(4 marks)**
8. Which month has the highest sales of respective items. **(3 marks)**
9. Does there exist any outliers in the sales? If yes, find out those outliers. **(4 marks)**
10. Suggest two more findings which are not covered in the above questions. **(5 marks)**

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