# Question Paper

## MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal School of Information Sciences (MSIS), Manipal
First Semester Master of Engineering - ME (Artificial Intelligence and Machine Learning / Big Data Analytics) Degree
Examination - November / December 2023

**Principles of Data Visualization (Elective -1) [BDA 5132]**

**Marks: 100**                                                                                    **Duration: 180 mins.**

**Monday, November 27, 2023**

**Answer all the questions.**

1) **Explain five types of web scraping techniques. (L2, CO1, PO4)** (10)

2) **Illustrate scrapy framework. Write a spyder script to extract information about a product having attributes: name, cost, manufacturer, rating and store it in a Jason file. URI: www.shopping-TV.com. Note: website is not allowed to scrape using bots or script, mention the required steps to overcome this problem. (L3, CO1, PO4)** (10)

3) **Create a car dataset with Pandas dataframe and execute following operation:** (10)

   1. **Count total cars per company**
   2. **Find the most expensive car company name**
   3. **Find the average mileage of each car making company**
   4. **Sort all cars by Price column (L3, CO2, PO1)**

4) **Consider a 3-D array with size (2,3,3), Demonstrate transpose with respect to (0,1, 2), (1,0,2) and (0, 2, 1). (L3, CO 2, PO 1)** (10)

5) **Assume a sample pandas data series. perform the following operation.** (10)

   1. **Convert pandas data series to a data frame.**
   2. **Display first 5 rows of data.**

3. **Remove the blank rows with all null entries.**
4. **Fill the missing values with Average on the column.**

**Illustrate the data frame before and after each operation. (L3, CO2, PO 1)**

6) **Demonstrate four difference between loc and iloc function with Python code snippet for the same. (L3, CO 2, PO 1)** (10)

7) **Explain categories of explanatory visualizations based on the relationships between the three necessary players. (L2, CO4, PO4)** (10)

8) **Describe Building blocks of Power BI. (L2, CO 3, PO 4)** (10)

9) **Demonstrate fact and dimension table with an example and list their characteristics. (L2, CO3, PO4)** (10)

10) **Define DAX. Illustrate how DAX function are written. Demonstrate following DAX formulas with a context: DISTINCTCOUNT, COUNT, SUM (CO3, L2, PO4)** (10)

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