RASA INSTITUTE OF ANALYTICS

Pre-Internship Assignment Pack – Data Science Track

1. Overview

This document provides a full set of engaging and preparatory assignments for students joining the Data Science internship program.
It includes aptitude tests, reasoning problems, fun activities, and dataset suggestions to build a strong foundational mindset.

2. Pre-Internship Aptitude & Logic Assignment

Topics Covered:
- Aptitude (Quantitative Ability)
- Logical Reasoning
- Basic Programming Logic (Pseudocode-based)
- Data Interpretation

Aptitude Questions:
Q1. A train 360 m long is running at 45 km/h. In what time will it pass a bridge 140 m long?
Answer: 40 s

Q2. The ratio of ages of two persons is 4:5 and their sum is 72. What are their ages?
Answer: 32 and 40 years

Q3. A shopkeeper buys 80 articles for ₹2400 and sells them at 16% profit. What is the selling price of one article?
Answer: ₹34.80

Logical Reasoning Questions:
Q1. Find the next number in the sequence: 2, 6, 12, 20, ?
Answer: 30

Q2. If 'MANGO' is written as 'NZOHF', how is 'APPLE' written?
Answer: BQQMF

Q3. Statements: All engineers are hardworking. Some hardworking people are teachers.
Conclusions?
Answer: Some hardworking people are not engineers.

Programming Logic:
Q1. Write pseudocode to calculate factorial of a number.

```
BEGIN

 FUNCTION factorial(n)

  SET result TO 1

  FOR i FROM 1 TO n DO

   result = result * i

  ENDFOR

  RETURN result

 END FUNCTION


 DISPLAY "Enter a number:"

 INPUT num

 RESULT = factorial(num)

 DISPLAY "Factorial of", num, "is", RESULT

END
```

Q2. Write pseudocode to print even numbers from 1 to 20.

```
BEGIN
 FOR i FROM 1 TO 20 DO
  IF i MOD 2 = 0 THEN
   PRINT i
  ENDIF
 ENDFOR
END
```

Q3. Trace logic to sum even numbers between 1 and 5.

```
# Initialize sum variable
sum_even = 0
# Loop through numbers from 1 to 5
for num in range(1, 6):
  if num % 2 == 0:  # Check if the number is even
    sum_even += num
print(f"Sum of even numbers between 1 and 5 is: {sum_even}")
```

Data Interpretation:
Table with student enrollments from 2020–2023 in AI, ML, DS.
- Calculate total DS students
- Find highest growth course
- Average AI enrollment

3. Engaging Assignments

1. Mini Data Hunt
Explore datasets like Titanic or IPL stats. Find youngest person, most frequent category, highest value.

2. Meme Logic Challenge
Analyze funny logic memes. Identify what's wrong, and suggest corrections.

3. Dataset Storytelling
Use a dataset to create a 150-word news-style story. Merge facts and narrative.

4. Pair Programming Logic Puzzle
Partner up to solve basic logic tasks like printing primes, finding second-largest number, etc.

5. Chart the Weird Challenge
Use weird/fun datasets (UFOs, baby names). Create chart + caption.

4. Suggested Public Datasets

1. Titanic Dataset – Survival analysis dataset.
2. Netflix Movies & TV Shows – Great for content trends.
3. IPL Match Data – Match scores and player stats.
4. UFO Sightings – Good for 'Chart the Weird'.
5. Baby Names – Trend analysis over decades.
6. Reddit/Twitter Sentiment – Social sentiment for meme challenges.
7. World Bank Indicators – Use for storytelling.
8. UCI ML Repository – Use for logic-based or supervised learning.

Explore these datasets from sources such as Kaggle, Data.gov, or UCI ML Repository.