Date: 18/02/2026

NATIONAL SKILL TRAINING INSTITUTE (WOMEN), INDORE

ARTIFICIAL INTELLIGENCE PROGRAMMING ASSISTANT
(MODULE 4 & Power BI - INTERNAL PRACTICAL)
2025-26

Set 3

TIME: 3 Hrs **MARKS: 50**

Note: Attempt any 1 from Each Section

Data Science (Any One)

1. With the Indian Agriculture Crop Production Dataset , analyze the production of wheat vs maize in northern states. Which crop is more dominant, and what trends do you observe?
   Dataset: Crop Production in India
   Task:
   a. Filter data for northern states (e.g., Punjab, Haryana, Uttar Pradesh, Bihar, etc.).
   b. Extract production data for wheat and maize.
   c. Clean and preprocess the data (handle missing or inconsistent entries).
   d. Calculate total and average production of wheat vs maize in the selected states.
   e. Visualize crop production trends using bar/line charts.
   f. Compare dominance of wheat vs maize and highlight observed trends.

2. Using the retail dataset, identify the top 10 products by sales and revenue. Clean inconsistent values, remove duplicates, and normalize the sales data. Create bar and line plots to show monthly sales trends. Analyze all the chart: Total Sales, Average Order Value, and Repeat Customers.
   Dataset: https://www.kaggle.com/datasets/vijayuv/onlineretail
   Task:
   a. Clean the data (handle inconsistent values, remove duplicates, check missing entries).
   b. Normalize the sales data for consistency.
   c. Identify the top 10 products by total sales and revenue.
   d. Create bar and line plots to show monthly sales trends.
   e. Calculate and analyze key metrics values.
   f. Summarize insights from the analysis and visualizations.

Power BI (Any One)

1. The Students Performance dataset contains detailed information on 1,000 students. This dataset is widely used for exploring the relationships between socioeconomic factors and academic achievement, as well as for understanding what influences student performance.
   Dataset: StudentsPerformance.csv
   Task
   a. Analyze Student Scores by Gender - Create a Clustered Column Chart comparing average Math, Reading, and Writing scores by *gender*.
   b. Explore Influence of Parental Education - Build a Bar Chart showing the average total score grouped by *parental level of education*.
   c. Evaluate Effectiveness of Test Preparation Course - Create a Stacked Column Chart comparing the pass percentage (Math score ≥ 50) between students who completed the test preparation course and those who did not.
   d. Study Score Distribution Across Racial/Ethnic Groups - Use a Histogram with bins to analyze the distribution of math scores across different *race/ethnicity* groups.
   e. Compare Lunch Type and Academic Performance - Create a Clustered Bar Chart showing average reading score for each *lunch type* category.
   f. Build an Interactive Academic Insights Dashboard - Create a single-page Power BI dashboard that includes: KPI cards: Average Math Score, Average Reading Score, Average Writing Score. Use Slicers for: Gender, Race/ethnicity, Parental level of education.

2. The Netflix_titles dataset contents the information on a variety of films and TV series from different nations and genres. It offers a comprehensive overview of the streaming service's global collection, to better understand entertainment trends, audience preferences, and content distribution patterns.
   Dataset: netflix_titles.csv.csv
   Task:
   a. Content Type Distribution (Movies vs TV Shows) - Create a Donut Chart or Pie Chart to visualize the count of Movies vs TV Shows.
   b. Content Addition Trend Over Time - Build a Line Chart showing the number of titles added per year.
   c. Most Popular Director on Netflix - Use a Bar Chart to display the top 10 directors based on the number of movie titles.
   d. Country-Wise Content Distribution - Create a Filled Map or Tree Map to visualize which countries contribute to the highest.
   e. Ratings Breakdown Across Content Types - Build a Grouped Column Chart to analyze the distribution of ratings across Movies and TV Shows.
   f. Interactive Netflix Insights Dashboard - Develop an interactive Power BI dashboard containing the visuals created. Use Slicers for: Type, Country, Release year.