

## Functional & Performance Testing Template

### Model Performance Test

|               |                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------|
| Date          | 17 February 2026                                                                                                  |
| Team ID       | LTVIP2026TMIDS70003                                                                                               |
| Project Name  | Weather-Based Prediction of Wind Turbine Energy Output: A Next-Generation Approach to Renewable Energy Management |
| Maximum Marks |                                                                                                                   |

#### Test Scenarios & Results – Wind Turbine Energy Prediction

| Test Case ID | Scenario (What to test)                           | Test Steps (How to test)                                                 | Expected Result                                                            | Actual Result | Pass/Fail |
|--------------|---------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------|-----------|
| FT-01        | Input Validation – Theoretical Power & Wind Speed | Enter valid and invalid numeric values in input fields                   | Valid inputs accepted, errors shown for invalid/non-numeric inputs         | –             | –         |
| FT-02        | Weather API Connection                            | Select a city and check if OpenWeather API responds                      | API responds successfully with temperature, humidity, pressure, wind speed | –             | –         |
| FT-03        | Prediction Output                                 | Provide valid inputs (Theoretical Power, Wind Speed) and click “Predict” | Correct energy output is generated by ML model                             | –             | –         |
| FT-04        | Error Handling                                    | Provide invalid inputs (e.g., empty fields, strings instead of numbers)  | Application shows “Invalid Input” message                                  | –             | –         |
| PT-01        | Response Time Test                                | Measure time taken for prediction after submitting inputs                | Prediction should be generated in under 3 seconds                          | –             | –         |
| PT-02        | API Speed Test                                    | Send multiple API calls simultaneously for different cities              | API should respond without slowing down or crashing                        | –             | –         |

