**Turbine Summative Project Checkbric Name:\_\_\_\_\_\_\_\_**

**Turbine Design & Construction**

|  |  |
| --- | --- |
| Support Tower   * 30 cm height limit * Free standing * Sturdy | 0 1 2 |
| Blade System #1   * Quality of construction * Thoughtfulness of design * Design consistent with blade #2 * Design differ in one major variable from #2 | 0 1 2 3 4 5 6 7 8 9 |
| Blade System #2   * Quality of construction * Thoughtfulness of design * Design consistent with blade #1 * Design differ in one major variable from #1 | 0 1 2 3 4 5 6 7 8 9 |
|  |  |
| **TOTAL** | /20 |

**Turbine Operation**

|  |  |
| --- | --- |
| Support Tower   * Blades easily mounted and unmounted | 0 1 2 |
| Blade System #1   * Balanced spin * Spins well enough to generate current | 0 1 2 3 4 |
| Blade System #2   * Balanced spin * Spins well enough to generate current | 0 1 2 3 4 |
|  |  |
| **TOTAL** | /10 |

**Turbine Design Report**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Blade System #1** |  | **Blade System #2** | |  |
| * Construction Details |  | * Construction Details | |  |
| * Materials List |  | * Materials List | |  |
| * Diagram Accuracy / Neatness |  | * Diagram Accuracy / Neatness | |  |
| * Diagram Labeled |  | * Diagram Labeled | |  |
| * Diagram Scaled / Dimensions |  | * Diagram Scaled / Dimensions | |  |
| * Diagram Side View |  | * Diagram Side View | |  |
| * Diagram Head-on View |  | * Diagram Head-on View | |  |
| * Discussion Design Features |  | * Discussion Design Features | |  |
| * Discussion Challenges |  | * Discussion Challenges | |  |
| * Overall Communication |  | * Overall Communication | |  |
|  |  |  | |  |
| **TOTAL** | | | /20 | |

**Turbine Analysis Report**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lab Report Format** |  | **Analysis** | |  |
| * Purpose |  | * Area calculated for blade #1 | |  |
| * Materials List |  | * Wind power calculated for blade #1, Three wind speeds | |  |
| * Testing Procedure (Past / Passive) |  | * P=I2R calculated for blade #1, Three wind speeds | |  |
| * Diagram of Testing Setup |  | * Efficiency calculated for blade #1, Three wind speeds | |  |
| * Data Table Organization |  | * Graph of Output Power vs Wind Speed for blade #1 | |  |
| * Data Table Measurement Error |  | * Graph of Efficiency vs Wind Speed for blade #1 | |  |
| * Blade system #1, Three Wind Speeds |  |  | |  |
| * Blade system #2, Three Wind Speeds |  | * Area calculated for blade #2 | |  |
| * Current measured in mA and converted  to A |  | * Wind power calculated for blade #2, Three wind speeds | |  |
| * Discussion of Power vs Wind Speed |  | * P=I2R calculated for blade #2, Three wind speeds | |  |
| * Discussion of Power Available vs Power Generated |  | * Efficiency calculated for blade #2, Three wind speeds | |  |
| * Discussion of Performance comparing the two blade systems (Refer to Graphs) |  | * Graph of Output Power vs Wind Speed for blade #2 | |  |
| * Conclusion |  | * Graph of Efficiency vs Wind Speed for blade #2 | |  |
| * Error Analysis (2 Sources) |  |  | |  |
|  |  |  | |  |
| **TOTAL** | | | /40 | |

TOTAL /90