**Physics Problem Solving Rubric**

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| **Criteria &**  **Rating** | **5** | **4** | **3** | **2** | **1** |
| **Strategic**  **Approach (S)** | Approach chosen is clearly shown, clearly written & all elements are valid. | Valid approach with minor errors that do not disrupt understanding. | Valid approach with multiple errors that impede understanding. | Invalid approach that demonstrates little understanding of the problem. | Little or no understanding of how to approach the problem |
| **Physics**  **Concepts (P)** | Appropriate concepts that are fully understood (symmetries, conserved quantities, etc.), clearly stated & employed correctly. | Appropriate concepts that are mostly understood but employed with errors. | Appropriate concepts identified, but not employed or understood. | At least one concept identified but unable to demonstrate understanding. | Little or no understanding of physics concepts. |
| **Mathematical Concepts (M)** | Correct starting equations; all mathematical steps are clearly shown and they flow easily toward the correct answer. | Correct starting equations. All mathematical steps are clearly shown but minor errors yield wrong answers.  **OR**  Correct starting equations with correct final result but the mathematical steps are hard to follow. | Correct starting equations. The mathematical steps are hard to follow and errors begin to impede application. | Can identify at least one equation, but unable to apply it/them. | Incorrect equations; demonstrates little or no understanding of mathematical concepts involved. |
| **Answer (A)** | 100% correct answer – analytically (IA) numerically (IA) & conceptually (IA). | Correct answer analytically (IA), but not numerically (IA). | Incorrect answer, but on the right path. | Unable to reach a correct answer on this path. | No answer. |

**KEY: IA= If applicable; score of zero = incomplete assignment (NSW = no shown work or MS = missing assignment).**

**Additional Notes:**