***ANSWER KEY for Part V: Light Curve Analysis***

**Answer Key**

1. Period: 4. 75 days (acceptable range 4.7 – 4.8 days) **1 pt**

2. Cepheid Variable Type 1 (acceptable answers Classical Cepheid Variable,

 Cepheid Population 1) **1 pt**

3. Mean apparent magnitude: 15.58

 (acceptable answer 15.48 – 15.68) **1 pt**

4. Luminosity: 2131

 using L = 354 P^ 1.152 Period - Luminosity relation

 (range 2000- 2300 acceptable) **2 pts.**

 **1 pt if within plus/minus 500 of range**

5. Absolute Magnitude: - 3.49 (range - 3.3 to - 3.6)

 Using M = 4.83 - (2.5 log L ) or M = -2.43 (log (P) -1) –4.16 **2 pts**

 **1 pt**  if in the range of plus/minus .5 magnitude

6. Distance: 65,163 Parsecs or 212,431 Light Years

 (Range 62,000 – 68,000 Pc or 204,000 – 220,000 LY) **2 pt**

 **1 pt if** within plus/minus 10,000 Pc or 20,000 ly

7. Star is located in the Small Magellanic Cloud **1 pt**