

**PART 2**

**A. Use the H-R diagram to answer questions 1-15. Circle the correct answer! Please look at the chart and identify where stars a-e are located.**

1. Which of the stars is oldest in terms of the life cycle?    a   b   c   d   **e**
2. Which of the stars is (are) burning hydrogen as fuel?    a   **b**   c   d   e
3. Which of the stars is (are) burning Helium as fuel?    **a**   b   c   d   e
4. Which of the stars is closest to death?    a   b   c   d   **e**
5. Which of the stars has the highest luminosity?    **a**   b   c   d   e
6. What causes the star with the highest luminosity to be the brightest?    a. surface temperature    **b. size**
7. Which of the stars has the lowest luminosity?    a   b   c   d   e
8. The star with the lowest luminosity is dimmest because of size or surface temperature?    a. surface temperature    **b. size**
9. Which has the highest surface temperature?    a   b   c   d   **e**
10. Main Sequence stars will become Red Giants  
When they run out of which fuel?    a. helium    b. carbon    **c. hydrogen**
11. Predict what phase Vega will enter next.    **a. Red Giant**    b. white dwarf

**12-15 Right the correct name for each group labeled with large NUMBERS, 12-15**

- |                        |                   |
|------------------------|-------------------|
| 12.    Super Red Giant | 13. Main Sequence |
| 14.    White Dwarf     | 15.    Red Giants |

## **Part 2**

### **B LIFE CYCLE OF STARS: *Each is worth two points.***

- |                     |                  |
|---------------------|------------------|
| 1. Protostar        | 2. Main Sequence |
| 3. Super Giant      | 4. Red Giant     |
| 5. Planetary Nebula | 6. White Dwarf   |
| 7. Black Dwarf      | 8. Supernova     |
| 9. Neutron Star     | 9. Black Hole    |

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### **C Essay on Star Clusters (15 points Possible)**

**Star Clusters are multiple star systems bound together by the force of gravity.**

**Star Clusters can be divided into two main groups.**

**One group is called Globular Clusters. They contain many stars and gravity holds them tightly together. They swarm just outside the galaxy and form a halo or bulge. We know they are old stars because when graphed on the HR Diagram, they are coming off the main sequence. They are also very low in heavier elements which also indicate their age. They formed from the same matter that formed our galaxies and an example is M-13 in Hercules.**

**The second group is called Open Clusters, which contain fewer stars than Globular Clusters. They are composed of young, hot stars of which are on the main sequence and they have an abundance of heavier elements, like our sun. They are also called galactic clusters which mean they are in our galaxy, not on the outside. They are located on the arms of our spiral galaxy. They form from nebulae rich in heavy elements and examples are the Beehive, Hyades and the Pleiades.**