

# AstroWikipStar

The LaTeX code that creates this quiz is released to the Public Domain  
Attribution for each question is documented in the Appendix

Saturday 3<sup>rd</sup> November, 2018



Latex markup at

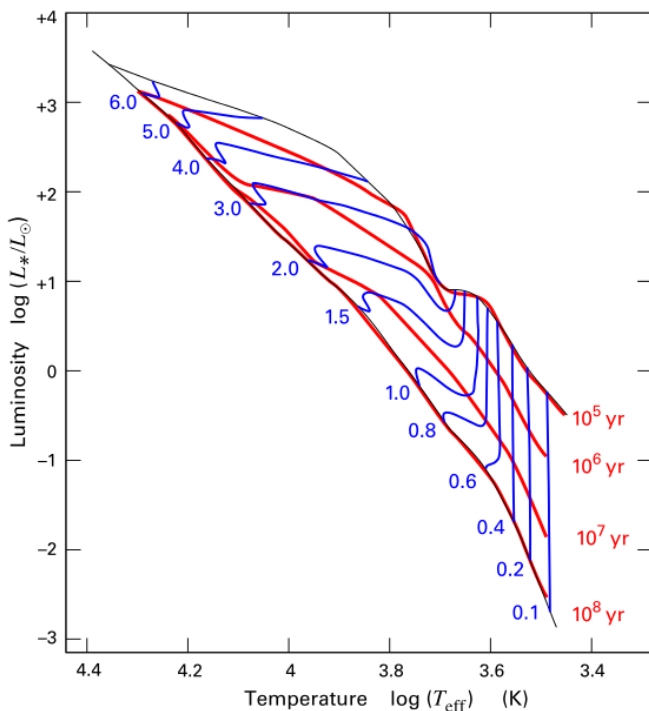
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# 1 Quiz

- Why is a star made of plasma? <sup>1</sup>
  - it is so hot that electrons are stripped away from the protons**
  - the intense gravity liquefies the substance, just as red blood cells liquefy plasma in the body
  - the interstellar gas was mostly plasma
  - plasma is always present when there are strong magnetic fields
  - plasma is generic word for "important"
- Pre-main sequence stars are often surrounded by a protoplanetary disk and powered mainly by <sup>2</sup>
  - the fission of Carbon from Helium
  - the fusion of Helium to Carbon
  - the release of gravitational energy**
  - collisions between protoplanets
  - chemical reactions
- Stars that begin with more than 50 solar masses will typically lose \_\_\_\_\_ while on the main sequence. <sup>3</sup>
  - 1% their mass
  - 50% their mass**
  - 10% of their magnetic field
  - 10% their mass
  - all of their magnetic field
- The Hayashi and Heney tracks refer to how T Tauri of different masses will move <sup>4</sup>
  - through an HR diagram as they die
  - through a cluster as they die
  - through a cluster as they are born
  - Two of these are true
  - through an HR diagram as they are born**



- How do low-mass stars change as they are born? <sup>5</sup>

- A. Increasing temperature with no change in luminosity
  - B. Increasing luminosity with no change in temperature
  - C. Decreasing temperature and increasing luminosity
  - D. Decreasing temperature with no change in luminosity
  - E. Decreasing luminosity with no change in temperature**
6. When a star with more than 10 solar masses ceases fuse hydrogen to helium, it <sup>6</sup>
- A. it fuses helium to carbon to iron (and other elements), then continues to release more energy by fusing the iron to heavier elements such as uranium.
  - B. it fuses elements up to uranium, and continues to produce energy by the fission of uranium.
  - C. it fuses helium to carbon and other elements up to iron and then ceases to produce more energy**
  - D. it fuses helium to carbon and then ceases to produce more energy
  - E. ceases to convert nuclear energy.
7. Many supernovae begin as a shock wave in the core that was caused by <sup>7</sup>
- A. electrons being driven into protons to form neutrons**
  - B. all of these processes contribute to the shock wave
  - C. iron fusing into heavier elements such as uranium
  - D. the conversion of carbon into diamonds,
  - E. carbon and other elements fusing into iron
8. A dying star with more than 1.4 solar masses becomes a -----, and those with more than 5 solar masses becomes a ----- <sup>8</sup>
- A. neutron star....black hole**
  - B. white dwarf....black hole
  - C. white dwarf....neutron star
  - D. blue giant....red giant
  - E. white dwarf...red dwarf
9. According to Wikipedia, a star with over 20 solar masses converts its Hydrogen to Helium in about 8 billion years, but the conversion of Oxygen to heavier elements take about ----- <sup>9</sup>
- A. 1 thousand years
  - B. 1 year**
  - C. 1 billion years
  - D. 1 million years
  - E. 10 billion years
10. What is the difference between a constellation and an asterism? <sup>10</sup>
- A. constellations represent regions of the sky, like state boundaries on a map of the USA**
  - B. asterisms are smaller than constellations
  - C. asterisms are larger than constellations
  - D. none of these is correct
  - E. constellations consist of never more than ten stars.
11. Stellar parallax is <sup>11</sup>

- A. None of these is correct.
- B. Two of these is correct**
- C. Triangulation to deduce the distance to nearby stars
- D. Using spectral lines to deduce the distance to nearby stars
- E. Using changes in the angular position of a star to deduce the star's distance
12. Giant molecular clouds with sufficient conditions to form a star cluster would have formed them long ago. Any stellar births in the past couple of billions of years probably resulted from \_\_\_\_\_ between clouds. <sup>12</sup>
- A. None of these is correct.
- B. collisions**
- C. photon exchange
- D. ion exchange
- E. Two of these are correct
13. A starburst galaxy. <sup>13</sup>
- A. All of these are correct
- B. Two of these are correct**
- C. has only dead or dying stars
- D. is a region of active stellar birth
- E. usually is a result of collisions between galaxies
14. Which of the following expresses Jeans' criterion for the collapse of a giant molecular cloud of mass,  $M$ , radius,  $R$ , and temperature  $T$ , and pressure  $P$ ? (Here  $\beta$  is a constant) <sup>14</sup>
- A.  $P > \beta MT$
- B.  $M > \beta RT$**
- C.  $R > \beta MT$
- D.  $P > \beta MR$
- E.  $T > \beta RM$
15. Which of the following changes in the properties of a giant molecular cloud might cause it to collapse? <sup>15</sup>
- A. Decrease mass at fixed temperature and size
- B. Increase size at fixed pressure and mass
- C. Two of these are correct
- D. Increase temperature at fixed mass and size
- E. Increase mass at fixed temperature and size**
16. What happens if you increase the size of a giant molecular cloud while keeping temperature and mass fixed? <sup>16</sup>
- A. It is less likely to collapse because temperature can never be kept fixed
- B. It is more likely to collapse because this will increase the temperature
- C. It is more likely to collapse because larger things have more gravity
- D. It is less likely to collapse spreading it out weakens the force of gravity**
- E. It is equally likely to collapse because size is not part of the Jean's criterion.
17. What is a Bok globule in the formation of stellar systems? <sup>17</sup>

- A. A supernovae precursor that attracts more gas atoms
- B. A cluster of giant molecular clouds that coalesce to form a solar system
- C. A small planet that formed before any stars have formed
- D. A black hole that enters a cloud and triggers the collapse
- E. A small portion of a giant cloud that collapses**

## 2 Attribution

### Notes

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