

Key

NOTE: Points for question 20 and 21 were not counted because of a printing error on the test causing misinterpretations. The test is now out of 90 pts.

Correct team name and number ____/1

DSO Questions

1.
 - a. Sirius (1 pt)
 - b. Canis Major (1 pt)
 - c. X-ray (1 pt)
 - d. Sirius B (1pt)
2.
 - a. Crab Pulsar (PSR B0531+21) (1 pt)
 - b. Taurus (1 pt)
 - c. Synchrotron radiation (2 pts)
3.
 - a. NGC3603 (1 pt)
 - b. Carina (1 pt)
 - c. Most massive HII region in Milky Way (1 pt)
 - d. Young, massive stars (1 pt)
4.
 - a. Polaris (1 pt)
 - b. North Star/ Pole Star (1 pt)
 - c. F-type yellow supergiant (1 pt)
 - d. Cepheid (1 pt)

____/16

Stellar Evolution

5. A (2 pts)
6. D (2 pts)
7. A (2 pts)
8. C (2 pts)
9. B (2 pts)
10. C (2 pts)

____/12

Short Answer (Points were redistributed from what was written on the test)

11. Balance between gas pressure and the gravitational force in a star (3.5 pt)

12. Proton-proton reaction (3.5 pt)
13. CNO cycle (3.5 pt)
- 14*. Specifies under what conditions the gravity of cloud of gas will overcome its internal pressure and collapse. This criterion can be stated in terms of a mass, density, or length scale. (Tie Breaker).
15. All type Ia supernova have (nearly) the same peak luminosity. This makes them useful for measuring distances. (3.5 pt)
16. Chandrasekhar limit (3.5 pt)
17. Tolman–Oppenheimer–Volkoff limit (3.5 pt)

____/21

Calculations

18. 1000 Kpc, No the supernova is not in our galaxy (5 pt)
19. 12.5 pc, Yes this star is in our galaxy (5 pt)
20. $16 L_{\odot}$ (0 pts, printing error on test)
21. $256 L_{\odot}$, $4 L_{\odot}$ (0 pts, builds off of #20)
22. 289 nm, A or B spectral class (5 pts)
23. 2.5 W m^{-2} , 90 W m^{-2} (5 pt)

____/20

Essay Rubric

5 pt	End or death of star is clearly defined. <ul style="list-style-type: none"> • White dwarf or Brown Dwarf. (4 pt, low mass) • Black hole or Neutron star. (4 pt, high mass) • Correct order. (1 pt)
5 pt	Post main sequence stage of stellar evolution is clearly defined. <ul style="list-style-type: none"> • Giant or Supergiant. (2 pt) • Planetary Nebula or Supernova. (2 pt) • Correct order. (1 pt)
5 pt	Main sequence stage of stellar evolution is clearly defined. <ul style="list-style-type: none"> • Hydrogen burning stage. (4 pt) • Correct order. (1 pt)
5 pt	Pre-main sequence stage of evolution is clearly defined. <ul style="list-style-type: none"> • Nebula/Molecular Cloud. (2 pt) • Star formation. (2 pt) • Correct order. (1 pt)
Tie Breaker	Number of regions correctly labeled on HR diagram.

_____ /20
Total Score _____/90 Tie Breakers _____