

Team name: KEY Team number: KEY

Answer Page: Section A

1. (a) 17, SS Cygni
(b) A,T
(c) 19
2. (a) S Doradus/Luminous Blue Variable
(b) 9,20
3. (a) 47 Tucanae, Globular Cluster
(b) 23
4. (a) Mira/Long Period Variable
(b) J, Mira Instability Strip
5. C (J to L)
6. (a) Recurrent Nova
(b) 16, T Pyxidis
7. (a) T Tauri
(b) Y
8. (a) 3,6
(b) 10,13
9. (a) RR Lyrae Instability Strip/RR Lyrae Gap
(b) 5,7
10. Cepheid, Semiregular, Cataclysmic
11. (a) 1, GRS 1915+105
(b) X-Ray Binary
12. (a) 11,16,17
(b) 14
13. (a) 2,8
(b) D,A,S
14. (a) 4,15
(b) 27
15. 12,4,11,2,13
16. Black Hole, Neutron Star/Pulsar
17. (a) A,J
(b) A
18. L,H,J
19. A (YTJCDA)
20. (a) 23,24
(b) L,H

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Answer Page: Section B

21. (a) Double main sequence
(b) Two populations of stars in cluster
22. (a) Apparent magnitude
(b) 5000-7000 Kelvin
(c) $10^9 - 10^{10}$ Years
23. (a) NGC 1846
(b) proper motion
24. (a) G1.9 + 0.3
(b) Asymmetry
25. (a) 31
(b) V1
(c) 31-32 Days
26. Double-mode, two observed periods
27. (a) U Geminorum
(b) dwarf star, white dwarf, accretion disk
(c) would have been too luminous
28. ^{56}Ni
29. (a) Infrared
(b) Visible
(c) Mode of pulsation
30. (a) Radius decreases with increasing mass, neutron degeneracy
(b) Strong radio emission
(c) Plerion/Pulsar Wind Nebula
(d) Sudden change in rotation rate

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Answer Page: Section C

31. (a) 0.05 - 0.08 Arcseconds
(b) 25,000 - 35,000 Kelvin
(c) O5 - B5
(d) 20,000 - 60,000 Solar Luminosities
(e) -5 to -6.5
32. (a) 14 - 14.5
(b) 60 - 100 Kiloparsec
33. (a) 19 - 22 Solar Masses
(b) 6 - 7 AU
(c) 15 - 18 Solar Masses
(d) Supernova/neutron star
(e) 10 km/s
(f) 25 - 27 km/s
34. (a) 40 - 50 Square Arcminutes
(b) 9,000 - 13,000 km/s
(c) $10^{50} - 10^{52}$ Ergs
(d) Shock wave when material stripped off companion