Astronomy Test 2016 Union County College Regionals Answer Key (each question w/o part 1 pt, each part 1 pt)

1. C
2. B
3. A
4. B
5. B
6. D
7. A
8. B
9. B
10. D
11. (a) 5 (b) (two of) NGC 1976, M42, LBN 974, Sharpless 281, Orion Nebula (c) The Trapezium
12. 1
13. 6
14. (a) 7 (b) Hubble Space Telescope & Spitzer Space Telescope (c) weather patterns mapped in highest detail in brown dwarf AND/OR able to probe atmosphere with such variability
15. (a) 4 (b) 51 Pegasi b (c) Radial velocity (d) Hot Jupiter (e) Michel Mayor and Didier Queloz
16. 9
17. 3 & AB Aurigae
18. 2 & HL Tauri (a) Those dark bands contain planets (b) Herbig-Haro object
19. 14, 1, 4, 15
20. (a) 11 (b) first Earth-sized world discovered in the habitable zone
21. 6.667 parsecs
22. (a) 0.120 days (b) 3.260 Jupiter Radii
23. (a) 1 year (b) 1.884 \* 10^8 km (c) Yes (d) The graph would flatten as it went up and steepen as it went down (equivalents acceptable)
24. (a) 7444.84 K (b) No
25. (a) 0.119 m/s (b) 5.634 \* 10^17 N
26. Spectral type/Surface temperature & Absolute magnitude/luminosity (in order)
27. C
28. F
29. A, L, B, E, K
30. I & G
31. Brown dwarf
32. FU Orionis
33. Red Giant
34. Tully-Fisher relation
35. T-Tauri
36. Black hole
37. White dwarf
38. Hertzsprung-Russell diagram (H-R Diagram)
39. Spectroscopic parallax
40. Hot Jupiter
41. Collapsing protostars are supposed to be fully convective, and if a protostar is in that region, the protostar would not be stable, or in hydrostatic equilibrium.
42. Abrupt mass transfer from accretion disc onto T-Tauri star; collapse of mass from disk to star surface (either acceptable)
43. First exoplanet orbiting a sun-like Star/prototype of Hot Jupiter class of exoplanets
44. A super-Earth has a lower mass than a mini-Neptune; those two are classified solely by mass.
45. You can’t get energy out of iron through fission or fusion due to iron having the lowest binding energy per atom of all the elements. Therefore, an iron core is chemically inert; the star will have no more energy with an iron core.
46. Jeans mass
47. Blue
48. PSR 1257; Aleksander Wolszczan (need both parts)
49. M, L, T, and Y; spectral types (need both parts)
50. Cannot accurately determine mass of planet; can only provide estimate of minimum mass/most likely to find types of planets least likely to be hosts of life. (either one acceptable)