

SciolyTina's R4TS Test Answer Key:

I - Multiple Choice:

1. What is the approximate diameter of Andromeda?
 - a. 200,00 light-years
 - b. 220,000 light-years**
 - c. 300,500 light-years
 - d. 326,981 light-years
2. What is Andromeda's brightest star?
 - a. Alpha Andromedae**
 - b. M31
 - c. Sirius
 - d. Algol
3. What is the magnitude of Altair?
 - a. 0.76
 - b. 0.81
 - c. 0.77**
 - d. 0.78
4. Which 3 Messier objects does the Constellation Auriga contain? (Pick 3)
 - a. M36**
 - b. M37**
 - c. M38**
 - d. M39
 - e. M40
 - f. M42
5. Where is the constellation Bootes located?
 - a. Southern Sky, -74 and 30
 - b. Southern Sky, +67 and 23
 - c. Northern Sky, 0 and +60**
 - d. Northern Sky, +97 and 1
6. What is a nickname for Canis Major?
 - a. The Smaller Dog
 - b. The Dog
 - c. The Horse
 - d. The Greater Dog**
7. The Star Procyon is currently in what stage?
 - a. Giant
 - b. Supergiant
 - c. Protostar
 - d. Main sequence**

8. What is Centaurus representing?
 - a. A horse
 - b. A centaur**
 - c. A man
 - d. An Ox
9. What type of galaxy is Centaurus located in and what type of galaxy?
 - a. NGC 5128, elliptical**
 - b. NGC 1333, spiral
 - c. NGC 4038, irregular
 - d. NGC 4039, barred spiral
10. How many messier objects are in Coma Berenices?
 - a. 8**
 - b. 9
 - c. 10
 - d. 5
11. What kind of galaxy is NGC 4028 and NGC 4039?
 - a. 2 spiral galaxies that are close to each other
 - b. 1 barred spiral and the other elliptical
 - c. 2 spiral galaxies that collided**
 - d. 1 irregular galaxy and 1 elliptical galaxy that collided
12. What is the Dragonfish Nebula made up of?
 - a. Dust and clouds
 - b. Dust and gas**
 - c. Gas and clouds
 - d. Cosmic radiation and debris
13. What does the life of a star depend on?
 - a. Luminosity
 - b. Mass**
 - c. Temperature
 - d. All the above
14. On the Hertzsprung-Russell Diagram, where are the main sequence stars located at?
 - a. Top right
 - b. Top left
 - c. Middle**
 - d. Bottom left
15. Based on the Yerkes Spectral Classification, what does Ib represent?
 - a. Normal supergiants**
 - b. Bright supergiants
 - c. Main-sequence
 - d. White dwarf

16. What is the hottest color of a star?
- Red
 - Orange
 - White
 - Blue
17. What type of color are G-type stars?
- Blue
 - Orange
 - Yellow
 - Red
18. What is a helium flash?
- When the star's core reaches 300 mil degrees and takes in a lot of helium
 - When the star runs out of helium
 - When the star switches from hydrogen to helium
 - All the above
19. How are protostars created?
- Collapse and fragmentation of molecular clouds
 - Temperatures of surroundings increase
 - Gravitational contraction
 - All the above
20. When large galaxies similar in mass collide with each other, they become
- Spiral galaxy
 - Elliptical galaxy
 - Irregular galaxy
 - Barred Spiral galaxy
21. A blue light photon _____ a red light photon.
- is less energetic than
 - is more energetic than
 - has the same amount of energy as
 - There is no such thing as a "red light photon"
22. What sort of light has the shortest wavelength?
- Radio waves
 - Infrared light
 - X-Rays
 - Microwaves
23. What is the Rv of Sgr A?
- 50 km/s
 - 25 km/s
 - 78 km/s
 - 46 km/s

24. How far away is the Baby Boom Galaxy?
- a. 12.2 bil
 - b. 12 bil
 - c. 12.2 mil
 - d. 10 mil
25. What is LMC?
- a. A planet
 - b. A cloud
 - c. A satellite galaxy
 - d. A nebula
26. What is Aldebaran known as?
- a. Eye of Taurus
 - b. A bright star
 - c. The follower
 - d. All the above
27. What type of radiation do hot stars emit the most?
- a. Ultraviolet
 - b. Gamma rays
 - c. X-ray
 - d. All the above
28. What type of galaxy has the most stars?
- a. Spiral
 - b. Large elliptical
 - c. Barred
 - d. Irregular
29. About how many stars according to the above question?
- a. 1 million
 - b. 1 billion
 - c. 1 trillion
 - d. 10 million
30. What is the spectral classification of the Sun?
- a. G
 - b. O
 - c. K
 - d. A
31. What type of radiation is the biggest?
- a. Radio
 - b. Microwave
 - c. Infrared
 - d. Gamma ray

32. What type of radiation is the smallest?

- a. Radio
- b. Microwave
- c. Infrared
- d. Gamma ray

33. What does the picture on the right show?

- a. Continuous
- b. Absorption
- c. Emission
- d. Blueshifted



34. What does the picture on the right show?

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- b. Absorption
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35. What does the picture on the right show?

- a. Continuous
- b. Absorption
- c. Emission
- d. Blueshifted



II - True or False:

1. The Pegasus star is located in the sixth Quadrant of the northern hemisphere.

- a. True
- b. False

2. Constellations travel from west to east.

- a. True
- b. False

3. Mizar and Alcor are binary systems

- a. True
- b. False

4. When the core of a low-mass star is depleted of Hydrogen, nuclear fusion subsides because Helium fusion occurs at a lower higher temperature.
 - a. True
 - b. False
5. Wien's displacement law states that the wavelength where a black-body emits most of its radiation is inversely not proportional to the temperature.
 - a. True
 - b. False
6. The Baby Boom galaxy is located in the Sextans constellation.
 - a. True
 - b. False
7. 30 Doradus is located in the H II region in the LMC.
 - a. True
 - b. False
8. Zeta Ophiuchi is the brightest nebula.
 - a. True
 - b. False
9. Ursa Major is in the Northern sky.
 - a. True
 - b. False
10. Castor is a single bright star.
 - a. True
 - b. False

III - Short Answers:

1. Measure of the brightness of a star or other astronomical object as seen from the Earth's location.
2. Magnitude the star would have if it was placed at a distance of 10 parsecs from Earth.
3. Nebula -> Protostar -> Massive Star -> Red Supergiant -> Supernova -> Neutron Star or Black hole or Nebula
4. Nebula -> Protostar -> Main Sequence -> Red Giant -> Planetary Nebula -> White Dwarf -> Black Dwarf
5. A theoretical stellar remnant, specifically a white dwarf that has cooled sufficiently that it no longer emits significant heat or light.

6. Betelgeuse, Procyon, Sirius
7. Deneb, Vega, Altair
8. Is the collapsed core of a giant star which before collapse had a total mass of between 10 and 29 solar masses.
9. Spherical, compact objects that are about the size of a large city and have more mass than the sun. These objects often look like flickering stars, but do not actually flicker and are not actually stars.
10. Hubble, Spitzer, Chandra, ALMA, Femi, EUVE, COBE

IV - Matching:

1. I
2. F
3. C
4. A
5. L
6. H
7. E
8. N
9. G
10. B
11. K
12. O
13. J
14. M
15. D

V - Picture Identification:

1. Betelgeuse
2. Deneb
3. Pollux
4. Capella
5. Algol
6. Spica
7. Procyon
8. Sirius
9. Mizar
10. Castor
11. Ursa Major
12. Ursa Minor
13. Lyra

14. Orion
15. The Sun

VI - Math Problems:

1. 3.28261^{23}
2. $4L_{\odot}$
3. 200 times
4. -16.9897
5. 1.20515