**Astronomy Assessment and TPS Questions:**

**Types and Spectra**

1. Which of the following is the type of spectrum we observe from the Sun?
   1. continuous spectrum
   2. bright line emission spectrum
   3. dark line absorption spectrum
2. If you analyze the light given off by a hot, low density interstellar cloud of gas, which type of spectrum do you see?
   1. dark line absorption spectrum
   2. bright line emission spectrum
   3. continuous spectrum
3. What happens to the light that is missing in an absorption spectrum?
   1. It is absorbed by atoms in a cool, low density cloud.
   2. It is emitted by atoms in a hot dense cloud.
   3. It is absorbed by the atoms inside the hot, dense object.
   4. It is reflected by atoms on the surface of the hot, dense object.
4. Imagine that you observe the Sun while in your space ship in orbit around the Moon. Which of the following spectra would you observe by analyzing the sunlight?
   1. dark line absorption spectrum
   2. bright line emission spectrum
   3. continuous spectrum
5. Which of the following is the type of spectrum you would observe if you could receive the light from the Sun before the sunlight passes through Earth’s atmosphere?
   1. absorption spectrum
   2. emission spectrum
   3. continuous spectrum
   4. none of the above`
6. What kind of spectrum is given off by a red colored, neon “OPEN” sign?
   1. an emission spectrum with more bright emission lines at the red end of the spectrum
   2. an absorption spectrum with more dark absorption lines in the blue part of the spectrum
   3. a continuous spectrum that is brighter in the red than the blue
   4. a spectral curve with a peak in the red part of the spectrum



1. Which of the following is true about the star whose spectrum is shown at right. [*Assume that the left end of the spectrum corresponds with short wavelengths and the right end corresponds with long wavelengths*.]
   1. Since the spectrum shows a lot of light being absorbed at the blue end the star will not be giving off much blue light.
   2. Since the spectrum shows a lot of light being absorbed at the blue end the star will appear red.
   3. Since the spectrum shows a lot of light being absorbed at the blue end the star will be moving toward the observer.
   4. Since the spectrum shows more absorption lines at the short wavelengths the star will be hot.
   5. None of the above is true.
2. What type of spectrum do we observe from all stars?
3. Continuous spectrum
4. Absorption spectrum
5. Emission Spectrum
6. None of the above
7. In which type of spectrum do black lines appear?
8. Continuous spectrum
9. Emission spectrum
10. Absorption spectrum
11. An absorption spectrum is produced when:
    1. light is produced directly from a hot, low-density cloud of gas.
    2. light from a hot, dense energy source passes through a cool, low-density cloud.
    3. light is produced directly from a hot, dense energy source.
12. When viewing an absorption spectrum, the dark lines you see represent what?
    1. Light that was not emitted by the energy source
    2. Light that was absorbed by a cool, low-density cloud
    3. Light that was blocked by objects in space
13. If the Hubble Space Telescope was looking at a distant star, the light from that star would produce which type of spectrum?
14. Continuous spectrum
15. Emission spectrum
16. Absorption spectrum
17. None of the above
18. Many streetlights in Tucson are filled with hot sodium gas. What kind of spectra do they emit?
19. Continuous
20. Emission
21. Absorption
22. A hot, low-density cloud is involved in producing a(n) \_\_\_\_\_\_\_\_ spectrum, while a cool, low-density cloud is involved in producing a(n) \_\_\_\_\_\_\_\_ spectrum.
23. Emission, absorption
24. Continuous, absorption
25. Continuous, emission
26. Absorption, emission
27. None of the above
28. A mirror on the roof of a house reflects the Sun’s light. How would the spectrum of this reflected light appear?
    1. as a continuous spectrum, because there is no cloud surrounding the mirror
    2. as an emission spectrum, because the mirror is hot and not very dense
    3. as an absorption spectrum, because the mirror is reflecting sunlight
29. If you want to see an object that produces an emission spectrum, where should you look?
30. Up in the sky at clouds
31. At a store’s neon open sign
32. At the person sitting next to you
33. None of the above is correct.
34. Two or more of the above are correct.
35. Two spectra of the Sun are observed. One was obtained using a telescope high above Earth’s atmosphere and the other was obtained using a telescope on the North Pole. How would the spectra obtained compare?
    1. The spectrum from above Earth’s atmosphere would have fewer absorption lines.
    2. The spectrum from the North Pole would have fewer absorption lines.
    3. The spectra would have the same absorption lines, because they are both from the Sun.
    4. The spectra may have different absorption lines, but they are arbitrary.
36. If you observe a star’s spectrum twice, once from Earth and once from a space shuttle above Earth’s atmosphere, what will you see?
    1. An absorption spectrum from Earth and a continuous spectrum from space
    2. An absorption spectrum from space and a continuous spectrum from Earth
    3. An absorption spectrum from space and an absorption spectrum with more absorption lines from Earth
    4. An absorption spectrum from Earth and an absorption spectrum with more absorption lines from space
    5. None of the above is correct.
37. You have two spectra for the star Zubenelgenubi. One was obtained with a telescope on Mt. Lemmon in Tucson. The other was obtained by astronauts in orbit around Jupiter. Which of the following statements about the spectra is true?
38. The spectrum from space will have more black lines.
39. The spectrum from Tucson will have more black lines.
40. They will both have the same amount of black lines.
41. Neither spectrum will have black lines.
42. The spectrum from space will not have any black lines; the spectrum from Earth will have black lines.