Planetary Astronomy. Quiz Review: Jovian planet atmospheres and physical properties.

1. The mass of Jupiter is

   (a) one billionth that of the Sun

   (b) one millionth that of the Sun

   (c) one ten-thousandth that of the Sun

   (d) one thousandth that of the Sun

   (e) one hundredth that of the Sun

2. Galileo's atmospheric probe found this gas to be less abundant than expected, but it is still the second most abundant gas in Jupiter's atmosphere.

   (a) Oxygen (b) Water vapor (c) laughing gas (nitrous oxide)
   (d) Hydrogen (e) Helium

3. Jupiter can retain light gases like H and He because of its

   (a) heat of collapse (b) chemical bonds (c) strong magnetic field
   (d) large surface gravity (e) charming personality

4. Jupiter's 9^h55^m rotation period is defined by its strong _____ which has about the same period as Jupiter's polar clouds.

   (a) equatorial cloud decks (b) tropical belt clouds (c) Great Red Spot
   (d) magnetic field (e) plasma torus

5. Although it is not the most dense moon around Jupiter, _____ is the largest of the Galilean satellites.

   (a) Callisto (b) Io (c) Ganymede (d) Europa (e) Adrastea

6. The analogue to the Earth's low and high pressure zones are Jupiters' _____. These appear as dark and light bands in visual-wavelength photos.

   (a) belts and zones (b) ovals (c) phosphines (d) troposphere
   (e) vertical cloud structure

7. T or F. Comet S-L 9 flew into Jupiter's atmosphere with a single, big explosion.

8. T or F. The Great Dark Spot on Neptune has persisted since its discovery.

9. T or F. All Jovian planets appear to demonstrate magnetic fields produced by the dynamo effect.

10. T or F. Neptune is more massive than Uranus despite being smaller in size.

11. T or F. The interiors of Uranus and Neptune do not have a thick layer of metallic hydrogen like Jupiter and Saturn.

12. T or F. Saturn has more pronounced belts and zones than Jupiter.

13. Saturn is depleted of this element relative to Jupiter because it rains or precipitates out of its lower atmosphere.

(a) oxygen (b) water vapor (c) laughing gas (nitrous oxide) (d) hydrogen e) helium

14. Jupiter can retain light gases like H and He because of its

(a) heat of collapse (b) chemical bonds (c) strong magnetic field (d) large surface gravity (e) radio confluence

15. The infrared radiation emitted by the Jovians comes partly from heating by sunlight, but also largely from _____.

(a) nuclear fusion (b) chemical bonds (c) the heat of collapse (d) nuclear fission (e) the dark lord Sauron

16. The object who's position was predicted by two astrophysicists before it was found was _____

(a) Mars (b) Uranus (c) Neptune (d) Jupiter (e) Saturn

17. Which of these objects has the lowest average density?

(a) Uranus (b) Jupiter (c) Neptune (d) the Moon (e) Saturn

18. Saturn's rings are edge-on and vanish when it is at:

(a) opposition.

(b) conjunction with the Sun.

(c) greatest elongation.

(d) an equinox.

(e) a solstice.

19. The bluish hues in Neptune and Uranus are attributed to _____.

(a) methane (b) air (c) water vapor (d) ammonia (e) ammonium hydrosulfide

20. The mass of Jupiter is most about _____ times the Earth's mass.

(a) 3 (b) 30 (c) 120 (d) 300 (e) 1000

21. The _____ of both Uranus and Neptune are highly tilted relative to their rotation axes and significantly offset from the planet's centers.

22. What is the probable cause of the magnetic fields around planets?

(a) a solid chunk of magnetized iron in the planet's core (b) a liquid, conductive interior combined with rotation (c) auroral activity (d) entrainment of the Sun's magnetic field

23. The substance that gives Jupiter its orangish hues is _____.

(a) helium (b) ammonia (c) water (d) nitrogen
(e) ammonium hydrosulfide

24. The most abundant element on the Jovian planets is _____.

25. "Weather" is nature's way of redistributing and evening out _____.

(a) wind (b) helium (c) water (d) wealth (e) heat or energy

26. Shoemaker-Levy 9 was a(n) _____ that collided with _____.

(a) moonlet, Saturn (b) comet, Saturn (c) asteroid, Jupiter
(d) comet, Titan (e) comet, Jupiter

27. What is the axial tilt of Saturn?

(a) like Jupiter, almost zero
(b) about half of our own, 12.5 degrees
(c) a little more than ours, 27 degrees
(d) similar to Neptune's, 43 degrees
(e) flopped over like Uranus, 95 degrees

28. William Herschel thought he had found a comet when he spotted the green disk of:

(a) Triton.
(b) Uranus.
(c) Neptune.
(d) Pluto.
(e) Sedna.

29. The planet whose pole was facing the Sun when visited by Voyager 2 in 1986 was:

(a) Jupiter. (b) Saturn. (c) Uranus. (d) Neptune. (e) Pluto.