Astro 1051. Planetary Astronomy.

Review questions for Quiz 4. (Mostly Ch. 6, some Ch. 16, and some Ch. 7).

1. T or F. The total mass of all the planets is about half the mass of the Sun.

2. T or F. Some terrestrial planets have no Moons.

3. T or F. Curiosity is a rover that recently landed on Venus.

4. T or F. A planet with a density of 5000 kg/m$^3$ most likely has a gaseous composition.

5. (2pts) Name 4 things in our solar system, excluding the planets (and things on the planets).

6. All of the following are properties of terrestrial planets except ________.
   (a) high density    (b) possessing many moons    (c) close to the Sun    (d) lacking ring systems    (e) Earth-like composition

7. On which of the terrestrial planets are surface features most easily seen from an Earth-based telescope?
   (a) Mercury    (b) Venus    (c) Mars    (d) Jupiter    (e) Saturn

8. When we divide a planet’s mass by its volume, we get ________
   (a) the planet’s average density
   (b) the planet’s central density
   (c) the planet’s uncompressed density
   (d) 1100 kg/m$^3$ for all terrestrials
   (e) its average pressure

9. Which type of planet, Jovian or Terrestrial, has the higher ... (1 pt each)
   (a) spin rate? (J or T)______?
   (b) mass? (J or T)______?
   (c) radius? (J or T)______?
   (d) distance from the Sun? (J or T)______?
   (e) density? (J or T)______?

10. (1 pt) The spacecraft that was sent to primarily observe Jupiter was ________.
    (a) Cassini    (b) Venera    (c) Magellan    (d) Messenger    (e) Galileo

11. (1 pt) A spacecraft that was sent to observe Venus was ________.
    (a) Cassini    (b) Venera    (c) Magellan    (d) Messenger    (e) Galileo
12. (1pt) Without dust, the nebular theory for the solar system had trouble explaining ___________.
   (a) CCW orbits of planets  (b) coplanar orbits of planets  (c) a star at the center
   (d) how the gas could begin clumping together  (e) the rotation of the Sun

13. (1pt) The flattening of the solar nebula and its increase in spin during collapse are related to the conservation of ___________.
   (a) energy  (b) momentum  (c) angular momentum  (d) mass  (e) spin

14. (1pt) The terrestrial planets tend to be made out of high-melting point materials, while the Jovian planets contain mostly gases and low-melting point materials. This is a prediction of ___________.
   (a) special relativity
   (b) Rene Descartes
   (c) the condensation sequence
   (d) the nebular hypothesis
   (e) Laplace

15. The age of the solar system, as measured by radioactive dating of the oldest meteorites, is ___________ years.
   (a) 4.6 billion  (b) 12 billion  (c) 4.5 million  (d) 12 thousand  (e) 46 billion

Questions on Ch. 7, Planet Earth

16. Which layer of the Earth’s atmosphere contains most of its mass?
   (a) troposphere  (b) lithosphere  (c) mesosphere  (d) stratosphere
   (e) ionosphere

17. Which layer of the Earth’s atmosphere contains most of the clouds and weather?
   (a) troposphere  (b) lithosphere  (c) mesosphere  (d) stratosphere
   (e) ionosphere

18. The fraction of the Earth’s atmosphere that is made up of CO₂ is ___________.
   (a) in-between that on Venus and Mars  (b) lower than that on Venus and Mars
   (c) higher than on Venus and Mars  (d) steadily decreasing  (e) over 99%

19. The ___________, which extends far above the ionosphere, helps protect us from energetic charged particles from space (cosmic rays).

20. (1pt) The Earth’s core is subdivided into _____ parts. (Note: “core” not “interior”.)
   (a) 2  (b) 3  (c) 4  (d) 5  (e) 6

21. (1pt) The color of the rainbow that is scattered most effectively by air molecules is ___________.
   (a) red  (b) orange  (c) yellow  (d) green  (e) violet
22. The best way to reveal the outlines of crustal plates on the Earth is a map of ________.
   (a) the continents   (b) earthquake epicenters   (c) islands   (d) the oceans   (e) lines of latitude

23. Which property is unique to the Earth among the terrestrial planets.
   (a) clouds   (b) the greenhouse effect   (c) a dense core   (d) plate tectonics   (e) volcanos

24. The type of seismic wave which can propagate through the Earth’s mantle but NOT through the liquid core is the ________
   (a) P wave   (b) S wave   (c) L wave   (d) sine wave   (e) N wave

25. Which type of seismic wave can not penetrate through the outer core?

26. The analysis of seismic waves has shown us that the Earth ______
   (a) is rotating   (b) has a creamy, caramel center   (c) has a liquid inner core   (d) has a liquid outer core   (e) has a magnetic inner core

27. The driving force behind plate techtonics is thought to be ________ in the Earth’s mantle.
   (a) radioactivity   (b) rotation   (c) convection   (d) differentiation   (e) flooding

28. If we trace the Earth’s continental drift backward in time for 200 million years, we find ________
   (a) no change from today   (b) one large continent, dubbed Pangaea   (c) no mountain chains   (d) the oceans are much smaller   (e) a time when the crust was molten

29. The stage of planetary development which involves the sinking of dense material to the core is called ________
   (a) differentiation   (b) cratering   (c) flooding   (d) slow surface erosion   (e) weathering

From Ch.16 (The Sun): See the previous review questions for questions on The Sun.