

- 1 A planet with a large system of moons would have to be a
 - a. Kuiper Belt object.
 - b. terrestrial planet.
 - c. Jovian Planet.

- 2 A proton is the nucleus of an atom of
 - a. Protonium.
 - b. Hydrogen.
 - c. Positronium.
 - d. Deuterium.
 - e. Helium.

- 3 The number of near-Earth asteroids is large because they
 - a. are kicked out of the asteroid belt by Jupiter's gravity.
 - b. are in stable orbits and have nowhere else to go.
 - c. are the remains of a destroyed planet near the Earth.
 - d. are left over from the formation of our Moon.

- 4 If a sunspot on the Sun's equator goes around the Sun once, a sunspot far from the equator will go around
 - a. more than once.
 - b. less than once.
 - c. exactly once.

- 5 Earthquakes are often caused by
 - a. drought.
 - b. high winds.
 - c. slipping tectonic plates.
 - d. collapsing mountains.
 - e. torrential rains.

- 6 The clearly different size classes of objects in our solar system are: the Sun,
 - a. the Jovian planets and the Terrestrial planets.
 - b. the planets, their moons, and the asteroids.
 - c. the inner Jovian planets, the outer Jovian planets, and the Terrestrial planets.
 - d. the planets and their moons.
 - e. the planets and the asteroids.

- 7 Europe and North America are
 - a. each on a different plate and move toward each other.
 - b. on plates that are moving past each other.
 - c. atop a single plate and move in unison.
 - d. each on a different plate and move away from each other.

- 8 Had Jupiter ignited, we would be living in a multiple star system. Such systems
 - a. are quite common.
 - b. are extremely rare.
 - c. have never been seen.
 - d. are almost universal.

- 9 The current effort to defend the Earth against space impacts consists of
- finding most near-Earth asteroids.
 - building a space-patrol fleet of asteroid-killers.
 - re-directing Star-Wars anti-missile weapons.
 - finding places to hide.
 - finding most dino-killer type asteroids.
- 10 In the reaction that powers our Sun, the nuclei that collide in the last step to form helium-4 are
- helium-3 nuclei.
 - helium-2 nuclei.
 - protons.
 - neutrons.
 - deuterons.
- 11 The answer to the 'solar neutrino problem' is now thought to be that
- the sun's core has shut down.
 - neutrinos are vanishing.
 - neutrinos are being absorbed by the Sun.
 - neutrinos are changing type as they travel.
 - nuclear reaction theory is wrong.
- 12 Magnetic fields near the surface of the Sun are measured by using
- shifts in the orbit of Mercury.
 - shifts in solar spectra.
 - plasma waves following field lines.
 - magnetometers on space probes.
 - gamma ray emissions.
- 13 The layer of the atmosphere that tends to retain dust and smoke for long periods of time is the
- ozone layer.
 - mesosphere.
 - troposphere.
 - ionosphere.
 - stratosphere.
- 14 As seen from far above the Earth's North Pole,
- only Uranus orbits the Sun clockwise.
 - no planet orbits the Sun counterclockwise.
 - only Uranus orbits the Sun counterclockwise.
 - no planet orbits the Sun clockwise.
- 15 A solar flare is caused by
- convection currents below the photosphere.
 - turbulence in the Sun's photosphere.
 - magnetic field lines lifting out of the surface.
 - reconnecting magnetic field lines.
 - clouds of sodium vapor.

- 16 The epicenters of earthquakes are located
- at random places on the Earth's surface.
 - mostly near the Earth's equator.
 - mostly along continental boundaries.
 - mostly in the centers of oceans.
 - mostly along the edges of moving plates.
- 17 Which of the following statements about the moons of terrestrial planets is currently accepted?
- they never have moons.
 - they sometimes capture moons by accident.
 - moons typically form near them.
- 18 Colder air always
- goes westward.
 - rises.
 - goes eastward.
 - sinks.
 - moves in circles.
- 19 After a comet's closest approach to the Sun, its tail points
- out of the plane of its orbit around the Sun.
 - behind its direction of motion.
 - in all directions at once.
 - nowhere.
 - ahead of its direction of motion.
- 20 An asteroid impact that leaves a huge crater is probably due to an asteroid that is made of
- rocks loosely held together.
 - gold
 - frozen gas and ice.
 - iron and nickel..
- 21 The number of maria on the side of the Moon facing away from the Earth is
- less than on the side facing Earth.
 - greater than on the side facing Earth.
 - about the same as on the side facing Earth.
- 22 The circular structures on the surface of the Moon are the result of
- volcanos.
 - fortifications.
 - impacts.
 - gas bubbles.
 - moonquakes.

- 23 When the Earth passes through the orbit of a broken-up comet, we see
- fire on the Moon.
 - increased levels of ozone.
 - a display of Northern Lights.
 - a meteor shower.
 - a lightning storm.
- 24 The Moon's orbit
- is somewhat tilted relative to the plane of the Earth's equator.
 - is in the plane of the Earth's equator.
 - is in the plane of the ecliptic.
 - is perpendicular to the plane of the Earth's equator.
- 25 Asteroids are made of
- ice and frozen gas.
 - styrofoam and poster paint.
 - rock and iron.
 - concrete and marble.
 - gold and silver.
- 26 The Oort Cloud is located
- in the same general area as Pluto.
 - far beyond the orbit of Pluto.
 - between the orbits of Mars and Jupiter.
 - between the orbits of Uranus and Neptune.
- 27 The twisting of magnetic field lines by the Sun's differential rotation causes
- solar gravity.
 - solar eclipses.
 - sunspots.
 - solar granules.
 - sun dogs.
- 28 A spring tide can be expected when there is a
- first quarter moon.
 - waning crescent moon.
 - waxing gibbous moon
 - waxing crescent moon.
 - new moon.
- 29 If an asteroid that is one kilometer in diameter strikes the Earth, the result is likely to be
- a planet-wide catastrophe.
 - negligible.
 - similar to a nuclear explosion.

- 30 The high tides drawn up by the Moon's gravity run ahead of the Moon's motion because of
- the effect of the Sun's gravity.
 - dragging by the Earth's magnetic field.
 - the finite speed of gravity.
 - friction with the rotating Earth.
 - the delayed response of the ocean.
- 31 In the original Solar Nebula, Ice and volatile gases were lost
- close to the center where it was hot.
 - far from the center where it was cool.
 - everywhere in the nebula.
 - nowhere in the nebula.
- 32 Planetesimals of rock and iron, prevented from forming a planet by Jupiter's gravity, became
- the Kuiper belt.
 - the Oort Cloud.
 - the interstellar dust.
 - the Moons of the Jovian planets.
 - the asteroid belt.
- 33 The mass of a carbon atom is 12.00amu while the mass of a helium-4 atom is 4.003amu. If three atoms of helium fuse to form carbon, how much mass is converted into energy?
- 0.012amu
 - 0.006amu
 - 0.002amu
 - 0.004amu
 - 0.009amu
- 34 Nuclei such as protons do not fuse at low temperatures because their speeds are not enough to overcome their
- inertia.
 - electrical repulsion.
 - structural integrity.
 - hard shells.
 - nuclear friction.
- 35 The currently accepted theory of how the Moon formed is the
- co-formation theory.
 - breakup or fission theory.
 - divine intervention theory.
 - capture theory.
 - collision theory.
- 36 The time from one high tide to the next is lengthened by 24 minutes because of
- friction with the Earth.
 - the presence of continents blocking the tidal flows.
 - the motion of the Moon in its orbit.
 - the effects of land tides.
 - the rotation of the Moon on its axis.

- 37 Pressure waves are transmitted through
- liquids but not solids.
 - solids but not liquids.
 - both solids and liquids.
- 38 The Oort Cloud is thought to have originated when
- a planet failed to form near Jupiter.
 - icy objects condensed out in the inner Solar System.
 - icy objects condensed out just beyond Neptune.
 - nearby stars exploded as supernovae.
 - icy objects condensed out of the interstellar medium.
- 39 The Solar Wind originates in the Sun's
- chromosphere.
 - core.
 - transition zone.
 - photosphere.
 - corona.
- 40 The layer of dirt underfoot when you stand on the Moon is called the lunar
- lithosphere.
 - mantle.
 - crust.
 - regolith.
 - monolith.
- 41 The important difference between matter in the radiation zone and matter in the convection zone is that
- the convection zone is farther from the center.
 - the convection zone is closer to the center.
 - the convection zone is hotter.
 - the convection zone has no atoms with electrons.
 - the convection zone has atoms with electrons.
- 42 Solar prominences are lifted out of the Sun's surface by
- centrifugal force.
 - convection currents.
 - magnetic lines of force.
 - gravity.
 - electric lines of force.
- 43 The Kuiper Belt is the origin of
- short period comets.
 - the moons of Mars.
 - earth-crossing asteroids.
 - long period comets.
 - the moons of Jupiter.

- 44 The layer of the Earth's interior that consists of dense, semiliquid material is the
- inner core.
 - outer core.
 - mantle.
 - crust.
 - mesosphere.
- 45 High tide should occur
- when the Moon is rising.
 - when the Moon is overhead and when the Moon is over the opposite side of the Earth.
 - only when the Moon is overhead.
 - only when the Moon is over the opposite side of the Earth.
 - when the Moon is setting.
- 46 The layer of the Moon's interior that consists of a soft inner part and a solid outer part is
- the crust.
 - none of these because it is solid everywhere.
 - the mantle.
 - the core.
 - none of these because it is soft everywhere.
- 47 The term 'Greenhouse effect' refers to
- the destruction of the ozone layer.
 - a theory proposed by Charles T. Greenhouse.
 - the absorption of ultraviolet light by gases in the atmosphere.
 - the fact that the atmosphere is transparent.
 - the absorption of infrared light by gases in the atmosphere.
- 48 Convection currents in the Earth's Mantle
- are responsible for land tides.
 - cause mass extinctions.
 - happen but do not affect the crust.
 - do not happen because solid rock does not move.
 - are responsible for moving the tectonic plates.

Answer Key: Fall2007 AHX2D

- 1 Choice c. (Jovian Planet.)
- 2 Choice b. (Hydrogen.)
- 3 Choice a. (are kicked out of the asteroid belt by Jupiter's gravity.)
- 4 Choice b. (less than once.)
- 5 Choice c. (slipping tectonic plates.)
- 6 Choice a. (the Jovian planets and the Terrestrial planets.)
- 7 Choice d. (each on a different plate and move away from each other.)
- 8 Choice a. (are quite common.)
- 9 Choice e. (finding most dino-killer type asteroids.)
- 10 Choice a. (helium-3 nuclei.)
- 11 Choice d. (neutrinos are changing type as they travel.)
- 12 Choice b. (shifts in solar spectra.)
- 13 Choice e. (stratosphere.)
- 14 Choice d. (no planet orbits the Sun clockwise.)
- 15 Choice d. (reconnecting magnetic field lines.)
- 16 Choice e. (mostly along the edges of moving plates.)
- 17 Choice b. (they sometimes capture moons by accident.)
- 18 Choice d. (sinks.)
- 19 Choice e. (ahead of its direction of motion.)
- 20 Choice d. (iron and nickel.)
- 21 Choice a. (less than on the side facing Earth.)
- 22 Choice c. (impacts.)
- 23 Choice d. (a meteor shower.)
- 24 Choice a. (is somewhat tilted relative to the plane of the Earth's equator.)
- 25 Choice c. (rock and iron.)
- 26 Choice b. (far beyond the orbit of Pluto.)
- 27 Choice c. (sunspots.)
- 28 Choice e. (new moon.)
- 29 Choice a. (a planet-wide catastrophe.)
- 30 Choice d. (friction with the rotating Earth.)
- 31 Choice a. (close to the center where it was hot.)
- 32 Choice e. (the asteroid belt.)
- 33 Choice e. (0.009amu)
- 34 Choice b. (electrical repulsion.)
- 35 Choice e. (collision theory.)
- 36 Choice c. (the motion of the Moon in its orbit.)

- 37 Choice c. (both solids and liquids.)
- 38 Choice b. (icy objects condensed out in the inner Solar System.)
- 39 Choice e. (corona.)
- 40 Choice d. (regolith.)
- 41 Choice e. (the convection zone has atoms with electrons.)
- 42 Choice c. (magnetic lines of force.)
- 43 Choice a. (short period comets.)
- 44 Choice c. (mantle.)
- 45 Choice b. (when the Moon is overhead and when the Moon is over the opposite side of the Earth.)
- 46 Choice c. (the mantle.)
- 47 Choice e. (the absorption of infrared light by gases in the atmosphere.)
- 48 Choice e. (are responsible for moving the tectonic plates.)

Solutions

- 1 Module 014: Solar System Survey: Question 014.34
- 2 Module 042: Nuclear Fire Question 042.12
- 3 Module 016: Earth Impacts: Question 016.11
- 4 Module 040: Survey of the Sun Question 040.32
- 5 Module 021: Continental Drift Question 021.42
- 6 Module 014: Solar System Survey: Question 014.11
- 7 Module 021: Continental Drift Question 021.21
- 8 Module 017: Formation of the Solar System: Question 017.33
- 9 Module 016: Earth Impacts: Question 016.41
- 10 Module 042: Nuclear Fire Question 042.43
- 11 Module 042: Nuclear Fire Question 042.53
- 12 Module 041: Solar Magnetism and Activity Question 041.12
- 13 Module 019: The Earth's Atmosphere Question 019.23
- 14 Module 017: Formation of the Solar System: Question 017.12
- 15 Module 041: Solar Magnetism and Activity Question 041.41
- 16 Module 021: Continental Drift Question 021.12
- 17 Module 014: Solar System Survey: Question 014.23
- 18 Module 019: The Earth's Atmosphere Question 019.12
- 19 Module 015: Comets in Detail: Question 015.12
- 20 Module 016: Earth Impacts: Question 016.23
- 21 Module 022: The Earth's Moon Question 022.14
- 22 Module 022: The Earth's Moon Question 022.21
- 23 Module 015: Comets in Detail: Question 015.44
- 24 Module 022: The Earth's Moon Question 022.43
- 25 Module 014: Solar System Survey: Question 014.41
- 26 Module 015: Comets in Detail: Question 015.31
- 27 Module 041: Solar Magnetism and Activity Question 041.22
- 28 Module 018: The Moon and the Tides: Question 018.21
- 29 Module 016: Earth Impacts: Question 016.31
- 30 Module 018: The Moon and the Tides: Question 018.42
- 31 Module 017: Formation of the Solar System: Question 017.22
- 32 Module 017: Formation of the Solar System: Question 017.51
- 33 Module 042: Nuclear Fire Question 042.21
- 34 Module 042: Nuclear Fire Question 042.33
- 35 Module 022: The Earth's Moon Question 022.51
- 36 Module 018: The Moon and the Tides: Question 018.32

- 37 Module 020:Earth and Moon Interiors Question 020.13
- 38 Module 017: Formation of the Solar System: Question 017.42
- 39 Module 040: Survey of the Sun Question 040.25
- 40 Module 022: The Earth's Moon Question 022.31
- 41 Module 040: Survey of the Sun Question 040.13
- 42 Module 041: Solar Magnetism and Activity Question 041.31
- 43 Module 015: Comets in Detail: Question 015.23
- 44 Module 020: Earth and Moon Interiors Question 020.24
- 45 Module 018: The Moon and the Tides: Question 018.11
- 46 Module 020: Earth and Moon Interiors Question 020.34
- 47 Module 019: The Earth's Atmosphere Question 019.31
- 48 Module 021: Continental Drift Question 021.32