

1. What was the material from which the solar system formed?

- a. nebula made mostly of heavy elements but enriched in hydrogen and helium from supernova explosions
  - b. nebula made entirely of hydrogen and helium gas
  - c. debris from the explosion of a massive star
  - d. nebula made mostly of hydrogen and helium gas but enriched in heavier elements from supernova explosions
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2. The large amount of free oxygen in Earth's present atmosphere is primarily a result of

- a. carbon dioxide becoming dissolved in the oceans, releasing oxygen.
  - b. biological processes such as photosynthesis.
  - c. out-gassing by volcanoes and other geological processes.
  - d. splitting of carbon dioxide into carbon and oxygen by solar ultraviolet light.
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3. Ozone in the stratosphere performs an important task that protects life on Earth. What is it?

- a. Ozone absorbs much of the dangerous solar ultraviolet light.
  - b. Ozone absorbs the solar wind as it streams into Earth, thereby protecting life from dangerous ionizing radiation.
  - c. Ozone acts as a disinfectant, killing dangerous viruses and bacteria that drift in all the time from space before they can reach Earth.
  - d. Ozone absorbs infrared radiation, thereby providing a comfortable atmospheric temperature on the surface of Earth.
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4. On Earth, the majority of earthquakes occur

- a. along the zone of maximum tidal stress around the equator.
  - b. along regions of greatest thermal stress in arctic and antarctic regions.
  - c. along the boundaries of major tectonic plates.
  - d. in the centers of tectonic plates (e.g., North American continent).
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5. Earth's magnetic field protects Earth and its inhabitants from

- a. a significant proportion of the solar neutrinos, the enormous flux of which could otherwise produce damage to genetic material in life forms.
  - b. the solar wind, which would otherwise irradiate and damage life forms if not deflected.
  - c. the high-energy cosmic rays or hydrogen nuclei moving through our universe.
  - d. the majority of tiny but high-speed micrometeorites, which otherwise would crater Earth and cause significant damage to property.
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6. What is the origin of the majority of lunar craters?

- a. volcanic explosions
  - b. surface collapse after loss of groundwater by evaporation
  - c. impacts by meteoric material
  - d. impacts by space probes from Earth
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7. The smooth, dark maria on the Moon are

- a. areas that were still molten at the time of the early, heavy bombardment and therefore show no evidence of the impacts.
  - b. immense impact basins that are smooth because they were covered by lava flows after the early, heavy bombardment had ended.
  - c. immense impact basins that are smooth because earlier craters were wiped out by the impact.
  - d. regions that, although as old as the cratered highlands, escaped the early, heavy bombardment.
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8. When do neap tides occur?

- a. only when the Moon and the Sun line up on the same side of Earth
  - b. whenever Earth, the Moon, and the Sun form a straight line, regardless of which side of Earth the Moon is on
  - c. whenever the Earth-Moon line makes a  $90^\circ$  angle to the Earth-Sun line
  - d. only when the Moon, Earth, and the Sun form a straight line, with the Moon on the opposite side of Earth from the Sun
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