

Physics 1305 (Solar System Astronomy)

Exam 2, Sample Questions

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1) A seismograph detects two seismic waves, one after another, that were created by the same earthquake. From this we can infer that:

- A) The first wave to arrive was the S wave and the second was a P wave.
- B) The first wave to arrive was the P wave and the second was the S wave.
- C) The waves must have passed through a region of the Earth that was liquid.
- D) The earthquake did not occur at a point directly across the Earth from the position of the seismograph.

2) At a convergent boundary between an oceanic and a continental plate:

- A) The plates are moving towards each other.
- B) The plates are moving away from each other.
- C) Volcanism may occur.
- D) Folded mountain belts may be formed.
- E) One plate may be subducted below the other plate.

3) The maria on the moon:

- A) Are the oldest regions on the surface of the moon.
- B) Were created by large eruptions of low viscosity lava.
- C) Are found chiefly on the far side of the moon.
- D) Show a lower density of craters than the lunar highlands.

4) The atmosphere of Venus:

- A) Is much more dense than that of the Earth.
- B) Is composed largely of Carbon Dioxide.
- C) Is responsible for a runaway greenhouse effect.
- D) Has a more complicated circulation pattern than that of the Earth.

5) Which properties of the Moon does the giant impact theory for its formation help to explain?

- A) The lack of a large iron core in the moon.
- B) The fact that the Moon is slowly receding from the Earth on its orbit.
- C) The fact that various isotopes occur in the same ratios on both the Earth and Moon.
- D) The current lack of geologic activity on the Moon compared to the Earth.

6) The planet Venus:

- A) Exhibits plate tectonics similar to that seen on the Earth.
- B) Has a higher surface temperature than the planet Mercury.
- C) Orbits the Sun in a direction opposite that to most other planets.
- D) Shows no signs of geologic activity in the last 3 billion years.

7) Shield volcanoes:

- A) Have steeper sides than composite volcanoes.
- B) Erupts lava with a relatively high viscosity.
- C) Occur only on planets other than the Earth.
- D) Erupt lava with a relatively low silica content.

8) The atmosphere of the Earth:

- A) Is much less dense than that of Venus.

- B) Is composed largely of carbon dioxide.
- C) Is responsible for a greenhouse effect.
- D) Has a more complicated circulation pattern than the atmosphere of Venus.

9) You have a sample of radioactive material, that decays with a half life of 8,000,000 years into a single stable daughter. If the sample was initially purely the parent, and the ratio of number of parent atoms to daughter atoms is 1 to 63, which of the following are true?

- A) The age of the sample is 48,000,000 years.
- B) As more time passes, the ratio of parents to daughters will grow larger.
- C) After 52,000,000 years have passed, the ratio of parents to daughters will be 1 to 127.
- D) The half life of the sample does not change as the sample grows older.

10) Evidence for water on Mars includes:

- A) Large lakes observed by Mars Odyssey.
- B) Runoff channels.
- C) "Splat" craters
- D) "Teardrop" craters.

11) The planet Mercury:

- A) Rotates once for every orbit around the sun.
- B) In general has a surface that resembles the lunar highlands.
- C) Has a global magnetic field.
- D) Has had only about 50% of its surface mapped by spacecraft.
- E) Cannot be observed from Earth.

12) The Inner core of the earth:

- A) Is composed largely of Iron.
- B) Is known to be solid because we observe both S and P waves to pass through it.
- C) Has a higher pressure than the outer core of the earth.
- D) Formed before the outer layers of the earth did.

13) Craters are counted on two areas on the surface of the moon (lets call them Delenn and Lennier). If Delenn as a crater density of 2.4 craters per square kilometer, and Lennier has a crater density of 1.2 craters per square kilometer, which of the following can we conclude about the two regions?

- A) Delenn is older than Lennier.
- B) Delenn is twice as old as Lennier.
- C) Delenn is a mare region and Lennier is a highland region.
- D) Delenn is on the near side of the moon and Lennier is on the far side of the moon.