

29:52 Exploration of the Solar System

Homework Assignment # 5

Quiz must be completed on ICON by 8 AM, Monday, March 1

Note: For a couple of these, you need to study the textbook. The question may relate to material that was not presented in class.

1. A rock forms with a certain number of atoms per cc of isotope A. Isotope A decays into isotope B with a half life of 2 billion years. Assume that the rock forms with no atoms of isotope B. The rock is brought back from planet X, and is found to have 25 atoms/cc of A, and 75 atoms/cc of isotope B. How long ago did the rock form?
 - (a) 6 billion years (6 Gyr) ago
 - (b) 2 Gyr ago
 - (c) 4 Gyr ago
 - (d) 25 Gyr ago
2. How does the Manson crater here in Iowa compare in size with crater Kepler on the Moon? (Hint: an easy and enjoyable way to answer this question is to explore an internet site shown and discussed in class).
 - (a) they are roughly the same size
 - (b) Kepler is 5 times the diameter of Manson
 - (c) Manson is 5 times the diameter of Kepler
 - (d) Manson is only about 1 percent the diameter of Kepler
3. What is the minimum distance that ever separates Earth and Mercury (closest approach of Mercury)? (Hint: getting the right answer involves a little more thinking than the most obvious way of calculating it. However, even the simplest and most obvious way will get you close enough to select the right answer from the other, wrong answers.)
 - (a) 0.39 au
 - (b) 1.37 au
 - (c) 1.00 au
 - (d) 0.095 au
 - (e) 0.52 au
4. We can see the surface of Venus via radio waves, although we cannot see it with visible light. What is an analogous process here on Earth, in everyday life?
 - (a) I can see stars only when the Sun is out of the sky.

- (b) I can receive satellite TV signals even on an overcast day.
 - (c) I can see the interior of my body with x-rays, although I can't with visible light.
 - (d) Military night goggles show objects in ones vicinity, even when it is dark.
5. What is unusual about the rotation of Venus?
- (a) It rotates in the same sense as it revolves.
 - (b) It rotates in the opposite sense to its revolution.
 - (c) It rotates with the same period as it revolves around the Sun.
 - (d) Its axis of rotation is in the plane of the ecliptic.