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PRE-Mix

(Compilations of the Multiple Choice Questions)

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Geography

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(Solar System & Interior of Earth)

1. **Consider the following statements.**

   1. **Venus is hotter than Mercury because of its predominant CFCs in the atmosphere.**
   2. **Earth is sixth largest planet.**
   3. **The surface temperature of Jupiter is close to -100°C.**
   4. **Saturn has no solid surface and hence no record of a geologic history.**

Which of the above statements is/are incorrect?

A. 1 and 2 only

B. 2, 3 and 4 only

C. 1, 3 and 4 only

D. 2 and 4 only

Answer: A

Explanation

- Venus is hotter because of its predominant CO2 in atmosphere. It absorbs sunlight which creates super greenhouse effect.
- Jupiter has no solid surface and hence no record of a geologic history and it is the largest planet in the solar system.
- Surface is made up of may gases like Hydrogen, Helium, Methane etc. Its surface is very cold, probably -130 C.
- Saturn is a gas planet and has no solid surface. It is made of hydrogen, helium, ammonia, and methane.

2. **Consider the following statements with respect to differences between Oceanic and Continental Crust.**

   1. **The continental crust is older as compared to oceanic crust.**
   2. **Continental crust is less dense than oceanic crust.**
   3. **Continental crust is thicker, on the contrary, the oceanic crust is thinner.**

Which of the above statements are correct?

A. 1 and 2 only

B. 2 and 3 only

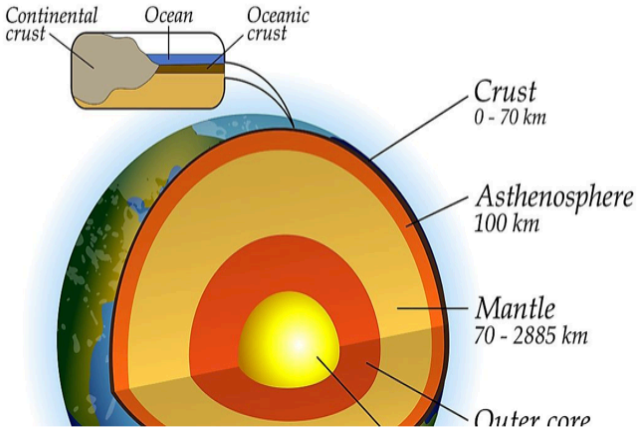
C. 1 and 3 only

D. 1, 2 and 3

Answer: D

Explanation

- The first difference between the two layers comes in the composition of the rocks.
- The oceanic crust is mainly made out of dark basalt rocks that are rich in minerals and substances like silicon and magnesium.
- By contrast, the continental crust is made up of light- colored granite rocks full of substances like oxygen and silicon.
- Another difference comes in the density of the two layers.
- From the descriptions, it is clear that the oceanic crust has a higher density than the more buoyant continental crust since the latter floats on top of the former.
- Getting into the technicalities, the continental crust has a density of around 3.0 g/cm3 compared to 2.6 g/cm3 of the continental crust.
- In addition, the continental crust is much thicker than the oceanic crust.
- The continental crust is older than the oceanic crust. This fact can be easily explained by the recycling process of the oceanic crust.



- The recycling process does not happen to the continental layer. Consequently, this ensures that the oceanic layer is always younger geologically.

3. Which one of the following statements correctly defines Kirkwood Gaps?

A. It is the gap between the orbits of Uranus and Neptune.

B. These are gaps within asteroid belt where very few or almost no asteroids are found.

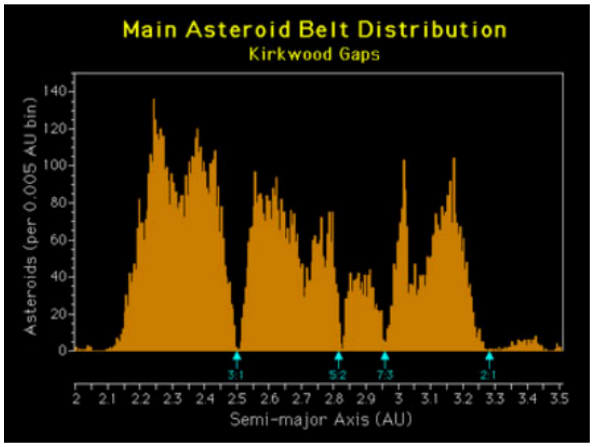
C. It is the region in the Earth atmosphere above north pole

D. where gravity is maximum. D. None of the above

Answer: B

Explanation

- A Kirkwood gap is a gap or dip in the distribution of the semi- major axes (or equivalently of the orbital periods) of the orbits of main-belt asteroids. They correspond to the locations of orbital resonances with Jupiter.
- The gaps were first noticed in 1866 by Daniel Kirkwood.



4. **Arrange the following elements in the decreasing order of their presence in Earth's Crust.**

   1. **Iron**
   2. **Calcium**
   3. **Potassium**
   4. **Sodium**

Select the correct code.

A. 2-3-1-4

B. 1-2-3-4

C. 1-2-4-3

D. 2-3-4-1

Answer: C

Explanation

Major Elements in the Earth's Crust

Element	Percent by Volume
Oxygen	46.60%
Silicon	27.72%
Aluminum	8.13%
Iron	5.00%
Calcium	3.63%
Sodium	2.83%
Potassium	2.59%
Magnesium	2.09%
Titanium	0.44%

5. **Consider the following statements:**

   1. **Lucy Mission will be the first space mission to study Europa, moon of Jupiter.**
   2. **A trojan is a small celestial body that revolves around the moons of Jupiter.**
   3. **Mission has been launched by NASA.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 3 only

Answer: D

Explanation

- A spacecraft has launched from Cape Canaveral on a mission to uncover "the fossils" of the Solar System.
- Over the next 12 years, Lucy will fly by one main-belt asteroid and seven Trojan asteroids, making it the agency's first single spacecraft mission in history to explore so many different asteroids. Lucy will investigate these "fossils" of planetary formation up close during its journey.
- The Lucy probe will head out to the orbit of Jupiter to study two groups of asteroids that run in swarms ahead of, and behind, the gas giant, Jupiter.
- The Trojans orbit the Sun in two loose groups, with one group leading ahead of Jupiter in its path, the other trailing behind.