

# Geochemistry Job Interview Questions And Answers



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## Geochemistry Interview Questions And Answers Guide.

### Question - 1:

Explain me what does a Geologist do on a typical day?

#### Ans:

One in academia for instance will spend the day doing research and writing papers and lecturing. Others will be involved in practical work in the field, examining rocks and structures and making deductions about age and formation and so on.

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### Question - 2:

Please explain what is granite?

#### Ans:

Granite is a hard, igneous rock. It is made up of mica, quartz, feldspar and sometimes bits of other rocks as well. Granite is usually pink, white, or grey. It is crystalline and so shines.

[View All Answers](#)

### Question - 3:

Tell me what layer of the earth does magma form?

#### Ans:

Magma is part of the layer just under the crust. It reminds us that whilst everything seems solid underfoot actually that is not quite so, and there are only relatively thin layers on top that move and float on a sea of magma underneath, it is this that moves the continents around the surface of the planet, all be it very slowly indeed.

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### Question - 4:

Tell me how were sedimentary rocks created?

#### Ans:

Sedimentary rocks have a clue to their origin in the name - sediment. They are the products of lots and many dead marine creatures, which piled up on the sea floor as they were formed in water. These piled up together over a period and the pressure of them all caused the formation of rock.

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### Question - 5:

Explain me what time period can carbon-14 dates have?

#### Ans:

Carbon 14 has a half-life of 5,730 years, and therefore it can be used to date very accurately a large majority of things, particularly wood and so on. It is only not useful for ancient things where all the carbon 14 will have gone, or almost gone - and for these there are other isotopes of other elements, that can be used with a much longer half-life.

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### Question - 6:

Tell me what did Radon detection in arid areas can help to explore?

#### Ans:

Radon is a radioactive gas that is associated with certain rocks, so perhaps this is a measure of the geology of the area, as in the rocks that are present in that location?

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### Question - 7:

Explain me how do we know magma does not originate in the liquid outer core?



**Ans:**

Specifically gases that are found in the magma correspond to having been formed at pressures many times greater than those in the outer core have, and rather therefore indicate that it was formed elsewhere.

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**Question - 8:**

Do you know which kind of volcano is the most destructive?

**Ans:**

Well each type of volcano can be very destructive and if you are talking in human loss of life terms than the answer is any type of volcano that is near dense population.

The most destructive type of volcano though that is generally acknowledged; as such, independent of people is that which is called the stratovolcano.

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**Question - 9:**

Explain what is happening when a metamorphic rock is forming?

**Ans:**

The rock is being subjected to intense heat and pressure at the time - this is what causes the dramatic stresses that are indeed what happens during the metamorphic process and what triggers the profound change in the chemical make up or constitution of the rocks.

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**Question - 10:**

Tell me what ways can igneous rock form two ways?

**Ans:**

Igneous rocks - got to that stage of your geography or chemistry class already?

Well here is a little information for you on the ways in which igneous rocks can form.

Igneous rocks are created when melted material crystallizes, e.g. from magma.

There are two formation methods, the first is that they form on the surface and these are called extrusive igneous rocks, or they can form inside the crust, and these ones are called intrusive igneous rocks.

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**Question - 11:**

Tell me what is china clay?

**Ans:**

It is a type of clay first used by the Chinese for making chinaware and porcelain.

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**Question - 12:**

Tell me how can we calculate or estimate the evaporation from lakes?

**Ans:**

Factors such as the volume and surface area of the lake together with average wind speed and temperature at the surface are the factors that can be used to work out how much evaporation there is at the surface.

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**Question - 13:**

Do you know how are fossils formed?

**Ans:**

Fossils are created amongst periods of rock formation, and caused by the gradual accumulation of sediment over millions of years at the bottom, most commonly, of the seabed.

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**Question - 14:**

Tell me what is the Cambrian?

**Ans:**

This refers to the Cambrian period, a geological time, at around 570 - 510 million years ago. It is when invertebrate life first appeared.

During the period comes what is known as the Cambrian Explosion - where the fossil record suddenly seems to radiate with an array of multi-celled creatures.

[View All Answers](#)

**Question - 15:**

Tell me why did the continents spread apart?

**Ans:**

This is due to the heat generated from the earth's interior and earthquakes - the convection currents deep within the earth because the movement of the material that sits on top.

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**Question - 16:**

Please explain what is the name of the largest volcano in the world?

**Ans:**

The largest volcano in the world over ground is called Mauna Loa. Mauna Loa is to be found in Hawaii, now a US State.

[View All Answers](#)

**Question - 17:**

Explain the major factors that influence mass movements?

**Ans:**

Things such as climate and food availability will make a big difference if it is too cold, too dry then people will need to move.

In addition, the amount of food is important too. Other factors might be human and political ones - such as a tough regime in charge of a country or if there is a war and so on then people will want to move too.

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**Question - 18:**

Explain it was a boiling, burning pile of rubble effectively?

**Ans:**

Over time it developed an atmosphere that changed in time as liquid water gathered on the surface of the earth and created an atmosphere with clouds of water and levels of certain gases that protected the planet below and made it the temperature that it is, which is obviously fit for life as we can tell by looking around us.

[View All Answers](#)

**Question - 19:**

Explain how can sedimentary processes concentrate and form resources?

**Ans:**

Give an example of a resource formed by a sedimentary process

Limestone is formed from pressure applied over time to dead creatures in the sea. Oil is formed because of sedimentary processes and which is one of the most important resources.

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**Question - 20:**

Explain what are the three major types of rocks?

**Ans:**

The three types of rocks are as follows:

- 1) Igneous (from volcanoes etc)
- 2) Sedimentary (Dead Sea creatures, time and pressure)
- 3) Metamorphic (other rock types compressed, squished, heated and geologically stressed in massive temperatures and pressure fairly deep in the earth)

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**Question - 21:**

Tell me what is the earth made of?

**Ans:**

The overall composition of the Earth, in terms of elemental composition is as follows:

- \* Iron 34.6%
- \* Oxygen 29.5%
- \* Silicon 15.2%
- \* Magnesium 12.7%
- \* Nickel 2.4%
- \* Sulphur 1.9%
- \* All others: 3.7%

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**Question - 22:**

Please explain why does marble rarely contain fossils?

**Ans:**

This is because of the way that it is formed. When you have a rock that is formed through metamorphosis then it has been created through heat and pressure acting on other rocks.

Fossils are inherently delicate things and therefore precious little would withstand the conditions that are required to create marble - and therefore marble hardly ever contains fossils as a direct result of this.

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**Question - 23:**

Tell me which of the Earth's interior layers have been drilled and sampled? What are the deepest drilling projects on record?

**Ans:**

The lower section of the Earth's crust has been reached. The possibility of the mantle is not far away. Depths of over 4,500 feet have been reached.



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**Question - 24:**

Do you know what makes mountains appear purple?

**Ans:**

This is to do with light and the atmosphere.

The way the rays of light strike the mountains at a greater height than us, then reflect and reach our eyes below the height of mountains, coupled with the air in-between, leads to them looking purple, in a similar way to the process with different wavelength light makes the sky look blue on a sunny day.

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**Question - 25:**

Tell me what is the difference between a semi-precious and a precious stone?

**Ans:**

The difference between precious and semi-precious comes down purely to human definitions that have been imposed.

There is nothing in and of itself about the nature of a stone, which makes it precious or semi-precious.

Rather it is down to human desirability of an element or mineral or form or a stone that decides.

Generally, the rarer and more sought after a mineral is, the more likely it is to be defined as precious.

Desired, but more common and less valuable items may be, in contrast, semi-precious.

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**Question - 26:**

Explain me what is a hypothesis?

**Ans:**

A hypothesis is a postulation as to what could be the case; it is a suggestion as to something that accurately models and explains some aspect in reality.

Then the hypothesis can be tested by getting it to make a prediction, then performing the actual experiment it predicts the outcome of, and see if the outcome matches the prediction.

The more experiments in practice the hypothesis can model and explain the better it is seen to be.

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**Question - 27:**

Tell me soils take how many years to form?

**Ans:**

There is no answer to this as it varies very much depending on the type of soil you are talking about and the conditions on earth at the time.

In places that are very warm or very wet with fast moving waters for instance then times are quicker than places where very little happens for thousands of years at a time.

However, the process is very slow indeed and therefore, you would be looking at hundreds of years to produce an inch of soil - and 1,000 years+ to get two or more inches.

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**Question - 28:**

Tell us in 1763, how did Great Britain try to end troubles with the Native American?

**Ans:**

By offering more rights and giving better treatment, more freedom and better options it was hoped to reduce the conflict and pre-empt problems from occurring because of this.

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**Question - 29:**

Explain me how do minerals become rocks and rocks become soil?

**Ans:**

Minerals or small particles of rocks, become rocks through pressure and temperature, often deep inside the earth's core, or simply through pressure for instance on the seabed.

Wherever many small things become something big it is usually through compression, temperature, or pressure.

The opposite process - large things being worn into smaller particles - usually comes through another sort of force. Either weathering, erosion - action by wind, rain, and water - is responsible.

Gradually many rocks are eroded by movement of ice and water over them or the wind action also to become finer and finer and form little grains - e.g. of sand or of soil.

[View All Answers](#)

**Question - 30:**

Do you know how old is the earth?

**Ans:**

The earth has only very recently been accurately dated. Until astonishingly recently, the earth was thought to be anywhere between a few hundred thousand and a few million years old. Now it is thought that the Earth is 4.6 billion years old, and was formed by interstellar dust coming together and being attracted to an increasingly strong gravitational force. Incidentally, life is thought to have arisen relatively early in the earth's existence - just 3.5 - 4 billion years ago!

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**Question - 31:**

Tell me how do geologists find out the age of mountains?

**Ans:**

Various ways and techniques can be used. With many mountains, the rock in the mountain can be sampled and then a dating technique applied to find the age. For instance, radiometric dating may be used to find the age of the rock. These techniques exploit the half-life of naturally occurring radioactive isotopes of elements present in tiny quantities to help work out how old something is. With some mountains other techniques may be used, for instance at a plate boundary scientists may be able to wind back time to work out when the plates must have collided and formed mountain ranges such as the Himalayas.

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**Question - 32:**

Please explain the formation of igneous, sedimentary, and metamorphic rocks?

**Ans:**

Igneous rocks are those that form from volcanoes and volcanic activity. Sedimentary rocks are laid down over great time in oceans and are the results of compression on dead organic matter like small sea animals and so on. Metamorphic rock is a change that occurs to igneous or sedimentary rock in the earth's crust due to the immense heat and pressure there acting on those rocks and chemically and physically changing their properties.

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**Question - 33:**

Explain the formation of igneous, sedimentary, and metamorphic rocks?

**Ans:**

Igneous rocks are formed through volcanic action and because of volcanic activity. Sedimentary rock takes a long time to form and is dead bits of animals laid down in the sea and compressed over millions of years to form rock; anywhere you see sedimentary rock you are seeing the remains of creatures that were once in the ocean a long time ago. Metamorphic rock is formed through a combination of heat and pressure inside the earth.

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**Question - 34:**

Explain me were there super continents before pangea?

**Ans:**

Pangaea is used to describe the state where all the land on earth was one great big landmass and therefore there was just one ocean too which was everything that surrounded that land mass. Therefore, before Pangaea or all the land was linked you are asking whether the land was previously split before it came together. That is possible - we do not know the answer. However, we read about it and current theory suggests that yes there have been break ups and come together forming super continents before, though this hardly seems set in stone.

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**Question - 35:**

Tell me what is ablation?

**Ans:**

Ablation is a technical term for the loss of snow and ice from a glacier. The process occurs by a combination of the two physical processes, melting, and evaporation, caused by the warming of the relevant ice on the glacier. It may be thought this would be most prevalent at the top of a glacier, however actually it occurs more at the foot - for the simple reason that temperatures tend to be higher here.

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**Question - 36:**

Tell me what is the difference between a canyon, gorge, and valley?

**Ans:**

The simplest way to answer this is to define each term, so you can see:

- 1) A canyon is a deep valley with steep sides think of the Grand Canyon most famously to visualize what this is.
  - 2) A gorge is a deep ravine, which usually has a river running through it - though this does not have to be the case.
  - 3) Finally, a valley is any depression, usually of a certain length, in the surface of the land and often contains a river.
- Therefore, a canyon is a specific type of valley, with particularly steep sides. A gorge is a deep depression that will usually contain a river.

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**Question - 37:**

Do you know what is the mantle made of?

**Ans:**

Earth's mantle - what is it made of - well, many things indeed, but mainly the following:  
Compounds of the following metals or semi-metals, along with oxygen compounds:

- 1) Iron compounds
- 2) Magnesium compounds
- 3) Aluminum compounds
- 4) Silicon compounds

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### Question - 38:

General Geochemistry Job Interview Questions:

#### Ans:

- \* Where do most students live?
- \* Can you make ends meet on your stipend?
- \* Do people socialize within the department? How?
- \* What do people do for fun?
- \* Do the faculty get along?
- \* What do you like the most about the faculty member (with whom you want to work)?
- \* What do you like the least about the faculty member (with whom you want to work)?
- \* Is the faculty member liked and respected within the department? If not, why?
- \* Is the faculty member a good advisor?
- \* Is the faculty member available when you need help?
- \* Is the faculty member willing to assist you or is the person completely hands-off?
- \* Is there a central person within the department (office) that tackles or has the answers to the millions of questions, paperwork, and minor problems that pop up?
- \* How is the morale among students within the department?
- \* Do you like living in the town/city/area?

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### Question - 39:

Basic Geochemistry Job Interview Questions:

#### Ans:

- \* How old is the earth? How has the earth evolved since formation? How do you calculate the age of earth?
- \* You want to estimate the evaporation through lakes. How would you do it? Name the three major types of rocks.
- \* How do minerals turn into rocks?
- \* Explain:
  - \* a.) Canyon
  - \* b.) Gorge
  - \* c.) Valley
- \* Name the minerals that attract lightning.
- \* Explain the process of fossil formation.
- \* How are igneous, sedimentary, and metamorphic rocks formed?
- \* How does a volcano erupt?
- \* Explain the formation of granite and diamond.
- \* Explain the constitution of mantle.
- \* Explain the process of formation of sedimentary rocks.
- \* Explain techno-fossils.
- \* Explain ablation.
- \* Differentiate between a semi-precious and a precious stone.
- \* Do mountains exist on moon? How were they formed?
- \* How is the age of mountains calculated?
- \* What do you mean by loam soil?
- \* What are applications of ArcGIS Desktop?
- \* Throw some light on water temperature in oceans and its effect on marine life.

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### Question - 40:

Explain me which carbonate mineral reacts readily with cool dilute hydrochloric acid to produce visible bubbles of carbon dioxide gas?

#### Ans:

Many carbonate minerals will do this. However since this is a chemistry homework question - I'm guessing for GCSE - then almost certainly the answer they are looking for is calcium carbonate, because this equation often needs to be learnt and then perhaps balanced in an exam question.

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### Question - 41:

Explain me what is the general statement regarding the temperature of water in oceanic depths?

#### Ans:

Generally, the relation is this - the further from the surface the colder the water.

This makes sense because of course as you go down further there is less and less sunlight, and therefore the temperature of the water drops.

[View All Answers](#)

### Question - 42:

Explain me how are the layers of schist separated into alternating light and dark minerals?

#### Ans:

The heat and compression deep within the earth's magma are what cause these unique and interesting layers of striation.

Depending on the particular stresses and strains, heat and pressure applied, and the individual rocks and minerals there in that composed the material, they react differently and this is what causes the banding.

[View All Answers](#)

### Question - 43:

Explain the process that forms igneous rocks with the process that form metamorphic rocks?





**Ans:**

Igneous rocks form in quite a different way to metamorphic rocks.

Igneous rocks form due to heat and volcanic activity specifically they form when molten rock cools and becomes solid.

However, metamorphic rocks are existing rocks - perhaps igneous ones - that have been changed by great pressure and often-great heat into metamorphic rocks.

[View All Answers](#)

**Question - 44:**

Tell me what is the rate of species and how does this relate to finding transitional species?

**Ans:**

The rate of species depends on the time and particular species and environment at the time, therefore there is no one absolute figure that can be used. However clearly the rate of species can be used to estimate where in transition each species is and when the next variations will come along.

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**Question - 45:**

Tell me where are Mountains of the Moon?

**Ans:**

These are a mountain range, along Zaire and Uganda in East Africa.

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**Question - 46:**

Explain me which type of rock is critical for the formation of geysers?

**Ans:**

Liquid rock is needed for geysers to form in the form of what is called magma - which is the geological name for liquid rock. Without that, you cannot get geysers forming.

[View All Answers](#)

**Question - 47:**

Explain me when does an atoll start to form?

**Ans:**

This begins to form when tiny marine animals - coral polyps - attach themselves to rocks on the seabed.

[View All Answers](#)

**Question - 48:**

Tell me what is the earth's crust made of?

**Ans:**

The overall composition of the Earth's crust, in terms of elemental composition is as follows:

Oxygen 46.6%

Silicon 27.7%

Aluminum 8.1%

Iron 5.0%

All other elements 12.6%

[View All Answers](#)

**Question - 49:**

Do you know what is loam soil?

**Ans:**

This is a type of soil, which is halfway between clay and sandy soils.

[View All Answers](#)

**Question - 50:**

Tell me how many seismograph stations are needed to allocate the epicenter of an earthquake?

**Ans:**

Usually the triangulation method is used, making three measurements, and then using simple geometry/maths to locate the positioning.

[View All Answers](#)

**Question - 51:**

Tell me what does regolith mean?

**Ans:**

This refers to a layer of loose surface material covering bedrock.

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**Question - 52:**



Tell me what is shale?

**Ans:**

It is a fine-grained, earthy, sedimentary rock like clay, but formed in thin layers.

[View All Answers](#)

**Question - 53:**

Tell me what is the difference between the geoid and the surface of the earth?

**Ans:**

The geoid is an imaginary surface that equivalences with the average (mean) sea level around the world.

Therefore, it is not an actual or real thing like the continents themselves that form the surface of the earth, but merely a useful model that we can imagine to extend through the continents.

[View All Answers](#)

**Question - 54:**

Tell me what separates the outer core from the mantle above it?

**Ans:**

There is a gradual transition caused by a change in temperature and reducing pressure.

[View All Answers](#)

**Question - 55:**

Tell me which is the largest reef?

**Ans:**

This is the Great Barrier Reef off the northeast corner of Australia.

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**Question - 56:**

Do you know why does a glacier move?

**Ans:**

It moves because the huge pressure of the ice and snow lowers the freezing point of its lower layers, causing them to melt.

[View All Answers](#)

**Question - 57:**

Tell me where would you expect to find the oldest basalt on the floor of the Atlantic Ocean?

**Ans:**

The oldest sea floor in the Atlantic that is made of basalt is to be found closest to the continents, the further into the ocean away from land that you go, the newer the sea floor.

This is because new sea floor is still being added in the middle of the ocean and therefore the banding and age of the rocks gets increasingly older the further you move from the centre of the ocean.

[View All Answers](#)

**Question - 58:**

Tell me what minerals attract lightning?

**Ans:**

Tall structures and things that are metal attract lightning, also trees do.

In fact, anything that is metallic containing mineral may seem to attract the lightning for instance things like iron.

[View All Answers](#)

**Question - 59:**

Tell me what is the minimum depth needed for a feature to be considered a canyon?

**Ans:**

In fact, it is a bit like considering when a few grains of sand become a heap of sand: there is no absolute point where something turns from a depression to a canyon. The definition is simply a deep, narrow steep-sided valley, but the minimum depth is not absolute.

[View All Answers](#)

**Question - 60:**

Do you know what is the earth's core made of?

**Ans:**

The outer core is liquid and the inner is solid. Both parts are made of alloy of two metals - iron and nickel, allowing the rise of the magnetic field that the earth exhibits and is so essential in protecting our existence.

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**Question - 61:**



Do you know What is coal?

**Ans:**

The remains of trees and shrubs grew millions of years ago, when the weather was mild and moist.

[View All Answers](#)

**Question - 62:**

Explain me what are examples of techno fossils?

**Ans:**

In which case I guess that you might be referring to things such as nuclear waste and other waste products of our recent systems for instance rubbish dumps and similar.

We have also fired some artifacts into space, for instance on spacecraft that aliens might some time come across we have given a glimpse or snapshot of our lives at a particular time in history.

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**Question - 63:**

Tell me how Continental heat flow is produced?

**Ans:**

This is caused by the magma - the molten rock - that is underneath each of the plates of the earth and causes them to move and flow along.

This is the major cause of this phenomenon to the best of our current geological understanding.

[View All Answers](#)

**Question - 64:**

Tell me how the asthenosphere works?

**Ans:**

The asthenosphere is a layer of the earth's crust. There are various definitions here is one of them from a geology resources definition list:

"A layer of soft but solid, mobile rock comprising the lower part of the upper mantle from about 100 to 350 kilometers beneath the Earth's surface."

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**Question - 65:**

Explain how has the earth changed since it was formed?

**Ans:**

The earth has changed massively since it was formed. Earth was a ball of rock that was hit and changed by loads of impacts and meteor impacts.

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