**Earth sciences – Geology**

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1. The rock cycle is the process through which the three distinct types of rocks—igneous, sedimentary, and metamorphic—are formed and transformed in relation to each other. Igneous rocks are formed by the process of solidification, which occurs when molten magma cools and transitions into a solid state. Sedimentary rocks are created through the compression of sediments under significant pressure, followed by the cementation of these sediments by minerals found in the Earth's crust. Metamorphic rocks are created through the process of melting and subsequent solidification of pre-existing igneous or sedimentary rocks due to intense heat energy, resulting in a distinct and altered composition.
2. Texture refers to the dimensions and organization of the mineral grains composing a rock in isolation. The minerals present in the rock are known as its composition.
3. Aphanitic rocks typically have a texture defined by minuscule grains that are imperceptible to the naked eye. Pannerite rocks are identifiable by the conspicuous presence of large mineral grains that exhibit remarkable transparency when observed without the aid of any optical instrument. Porphyritic texture is characterized by the occurrence of large crystals, known as phenocrysts, embedded within a finer-grained groundmass. The vesicular nature of rocks is defined by their textural composition, which is characterized by the abundance of rock vesicles. These vesicles are cavities generated by the escape of gases from molten lava, resulting in the formation of gas bubbles. Volcanic rocks acquire a glassy texture through rapid cooling without crystallization, resulting in the desired outcome. Pegmatitic stones are intrusive igneous rocks characterized by their coarse grain size. (2009) as stated by Boggs.
4. Common igneous rock-forming minerals include quartz (SiO2), feldspar [KAlSi3O8-NaAlSi3O8-CaAl2Si2O8], olivine [(Mg,Fe)2SiO4], pyroxene [(Ca,Mg,Fe)2(Si,Al)2O6], amphibole [(Ca,Na)(Mg,Fe,Al)(Si,Al)8O22(OH)2], mica [KAl2(AlSi3O10)(F,OH)2], and magnetite (Fe3O4) (Winter, 2010).
5. Peridotite and other ultramafic rocks have a magnesium oxide level over 18 percent. Mafic rocks, like basalt, are categorized based on their magnesium oxide (MgO) content, which typically ranges from 8 to 18 percent. The magnesium oxide (MgO) concentration in intermediate rocks, such as andesite, varies between 8% and 52%. Felsic rocks, such as rhyolite and granite, have a composition with the lowest amounts of magnesium oxide and iron oxides, which is less than 8% (Hess, 2019).
6. Peridotite is a mineral that is both intrusive and ultramafic. Basalt is a type of rock that is mafic in composition and is formed through volcanic activity. Gabbro is available in both a mafic and intrusive form. Andesite is a mineral that exhibits both extrusive and intermediate characteristics. Diorite is a mineral that can be classified as both intrusive and intermediate. Rhyolite is a silica-rich and volcanic rock that is formed from the rapid cooling of magma on the Earth's surface. Granite is an intrusive felsic rock.
7. The shield volcano, the cinder cone volcano, and the composite volcano are three distinct types of volcanoes. Shield volcanoes are characterized by their shape and pattern, and they are known for producing basalt as their main volcanic output. The gentle slopes of these sorts of volcanoes, such as those seen in the Hawaiian Islands, are a distinctive feature of their domes. During a Stombolian volcanic eruption, the volcano releases fine particles of ash and solidified blobs of lava known as lava bombs. This process ultimately leads to the creation of a Conder cone volcano. Composite volcanoes exhibit a conical shape and possess steep inclines at their peaks. They are created through a sequence of detonations and eruptions of molten rock that happen in a recurring manner. Mount Fuji serves as a prime example of this.

**References**

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