

Minerals and Rocks

Most common elements in Earth's crust: O, Si, Al, Fe, Ca, Na, K, Mg

Three rock types: igneous, sedimentary, metamorphic—how are they formed

Most minerals are silicates: name of common ones, what they have in them

Details of sedimentary rocks:

Clastic rocks composed of weathered particles of other rocks. Lithified by compaction and cementation. Cement commonly calcite, silica or iron oxide. Classified by particle size: conglomerate, sandstone, siltstone, shale. Shale most common type of sedimentary rock.

Chemical rocks formed by precipitation from solution. Includes limestone (made of calcite), chert (silica), rock salt, and gypsum. Some limestone precipitated by organisms: made of fossils. Limestone most common chemical sedimentary rock.

Features of sedimentary rocks include bedding, porosity, permeability, fossils

Geologic Time

The fundamental principle of geology: The present is the key to the past, is known as Uniformitarianism.

Rules of relative dating: superposition, crosscutting relationships, inclusion, original horizontality,

Unconformities are breaks in the rock record. Know types: angular unconformity, disconformity, nonconformity. Be able to identify in Grand Canyon sequence.

Correlation of rock ages relies upon fossils.

Know types of fossilization.

Eras are subdivisions of Eons, Periods are subdivisions of Eras

Paleozoic Era, Mesozoic Era, Cenozoic Era: predominant life forms, general age

Mass wasting

Influence of gravity

Names and characteristics of types

Triggers of mass wasting

How do these triggers cause mass wasting to begin

Specific example of mass wasting event, and details about its type

What is a lahar?

What potential mass wasting could occur in northwestern Oregon?

Stream systems

Hydrologic cycle: relative amount of evaporation and rainfall of oceans and continents

Gradient of streams: influences, results

Influences on stream velocity

Terms associated with meandering streams, how do they form

What changes take place in character of stream between headwaters and mouth

Describe delta formation, natural levee formation

Transportation by streams: types, relative amounts

Competence vs. capacity

'so many year' flood event

Drainage basin: tributaries, divides

Drainage patterns

Energy Resources

Combustion of hydrocarbons in oxygen releases heat.

Coal is formed from incompletely decayed plants. Petroleum formed from incompletely decayed diatoms and other floating sea organisms.

Petroleum deposits need source, cooking, reservoir and trap. Reservoirs must be porous and permeable. Most traps of petroleum are stratigraphic or structural. Be able to distinguish among them.

Early oil fields in the United States.

Natural gas is mostly methane.

Alternatives to Petroleum and Coal

Direct use of solar energy as heat, conversion to electricity by photovoltaics.

Disadvantages.

Biomass types: burning plant tissues, pressing seeds for oil, converting plant material to alcohol or methane. Disadvantages.

Water power turns turbines to generate electricity: river dam, tidal barrage, tidal lagoon. Grand Coulee dam facts. Disadvantages.

Wind power: make electricity. U. S. locations, potential utilization. Other area utilization.

Geothermal: present uses include space heating, aquaculture, other heating, electrical generation. Present U.S. and other area utilization. Advantages, disadvantages.

Other hydrocarbons: oil shale, tar sands—potential, locations, drawbacks of these.

Other alternative energy sources: coal gasification, hydrogen, fuel cells.