

Geology 101 midterm 1 Sept 21, 2015
Fifty (50) minute time limit.
Write your answer to the left of each question

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1
The age of the seafloor is best determined by:

- (a) GPS measurements
- (b) magnetic anomaly patterns
- (c) dating of fossils

2
Iceland is a unique geologic location where:

- (b) the midocean ridge rises above sea level
- (a) two oceanic plates are sliding past each other
- (c) ancient sand dunes are preserved in cross-bedded sandstones

3
Characteristics of gabbro includes:

- (a) chiefly mafic minerals and a fine grained texture
- (b) mainly pyroxene and low silica content
- (c) abundant quartz and a coarse grained texture

4
The process that breaks down rocks physically and chemically is:

- (a) diagenesis
- (b) weathering
- ~~(c) erosion~~

5
A thermal-subsidence sedimentary basin that forms by plate separation is located:

- (a) inside the rift valley
- (b) on the abyssal plain
- (c) on the continental margin

6
A silicate mineral with a double chain structure is:

- (a) amphibole
- (b) mica
- (c) pyroxene

7
Which one of these igneous rocks most likely cooled rapidly on Earth's surface:

- (a) gabbro
- ~~(b) granite~~
- ~~(c) rhyolite~~

8
The basic building block of silicate minerals is:

- ~~(a) a triangle with a carbon ion in the center~~
- (b) a tetrahedron with oxygen ions at the vertices
- ~~(c) a cubic structure with cations and anions packed together~~

9
Shale is a sedimentary rock that forms by:

- (a) diagenesis of plant materials
- (b) compaction of gravel
- (c) lithification of mud

SiO_4^{2-}

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A well-sorted sediment is likely to have been:
(a) ~~subjected to prolonged wind or water action~~
(b) deposited by a glacier
(c) ~~deposited close to the source of the sediment~~

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Many ore deposits are found in veins formed by:
(a) ~~poor sorting of sediments~~
(b) compressive forces at plate boundaries
(c) percolation of hydrothermal solutions

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Which one of the following best describes the scientific method:
(a) ~~observations that are not consistent with theory should be rejected~~
(b) good theories should be complicated since nature is complicated
(c) physical events must have rational explanations

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The mineral structure of calcite is:
(a) ~~a single chain of silicate ions~~
(b) ~~a three dimensional framework of carbonate ions~~
(c) carbonate ions and calcium atoms arranged in alternating sheets

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An ionic bond is best characterized by:
(a) ~~sharing of electrons in the outermost shells of atoms~~
(b) an electrostatic attraction between oppositely charged ions
(c) ~~an attraction between two cations of similar size~~

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Rocks that are formed by the shells of marine organisms are:
(a) carbonates
(b) ~~evaporites~~
(c) ~~siliciclastics~~

16

Plagioclase feldspar crystals are found above pyroxene crystals at the Palisades because:
(a) ~~there were no felsic minerals in the original magma~~
(b) pyroxene crystals settle out faster than plagioclase crystals from a melt
(c) the pyroxene layers cooled quickly at the edges of the intrusion

single-chain

17

The most abundant element in the crust is:
(a) ~~carbon~~
(b) oxygen
(c) ~~iron~~

18

The geomagnetic field is generated by:
(a) ~~a bar magnet located near the center of the Earth~~
(b) convective fluid motions in the liquid metal outer core
(c) ~~seafloor spreading~~

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Which one of these geological events occurred prior to assembly of Pangaea:
(a) ~~the separation of Australia and Antarctica~~
(b) the breakup of Rodinia
(c) ~~the closing of the Tethys Ocean~~

20

Bioturbation is a process that involves:
(a) organisms burrowing through mud
(b) ~~physical weathering of rocks by growing plant roots~~
(c) ~~transformation of diatoms into oil and gas~~