

Name: ANSWER KEY

Section: WHITE TEST

Test ID: A

Physical Geology GEOL 1100

Spring 2010

LECTURE EXAM 2

Instructions:

WRITE YOUR NAME AT THE TOP OF THIS PAGE.

Make sure the color of your test matches the colored stripe at the top of your bubble sheet.

Make sure the person next to you does not have the same color test.

Put away all papers, electronic devices, phones, Ipods, electronic dictionaries, and beverages. All backpacks, purses and bags should be zipped up and otherwise securely sealed.

We advise that you refrain from any actions that might be construed as cheating.

*Keep your eyes on your own paper.

*Do not hold your test up so that you can "see" it better.

*If you are wearing a hat, take it off or turn the bill so it faces backwards.

On the bubble sheet: **WRITE YOUR LAST NAME FIRST**
fill in the bubbles below your name.

Write your **W** number under "identification codes" but don't bother filling in the bubbles.

Write your section number under "special codes" but don't bother filling in the bubbles.

Section 10 = Tues 10-12 (Lee)

Section 11 = Tues 1-3 (Bridget)

Section 12 = Tues 3-5 (Laura W.)

Section 13 = Tues 7-9 (Ted)

Section 14 = Wed 8-10 (Lee)

Section 15 = Wed 1-3 (Bo)

Section 16 = Wed 3-5 (Laura W.)

Section 17 = Thurs 8-10 (Laura H.)

Section 18 = Thurs 10-12 (Ted)

Section 19 = Thurs 3-5 (Bridget)

This is a Multiple Choice test.

*Mark the choice that *best* completes the statement or answers the question.

There are 62 questions each worth roughly 2 pts towards your final grade.

*Mark your bubble sheet in pencil only; using a pen will result in a score of 0. Fill in the bubbles completely. Partially filled bubbles may be marked as incorrect by the scanner.

Igneous and Volcanic Landscapes and Processes

- D 1. Volatiles are substances that _____.
- catch fire when exposed to air
 - melt immediately upon contact with a hot body of magma
 - crystallize most rapidly out of a melt
 - have a tendency to evaporate and are stable as gases
- A 2. A dike is _____.
- a sheetlike intrusion that cuts across preexisting layers
 - an intrusion formed within the magma chamber of volcano
 - a cooled layer of lava
 - a sheetlike intrusion that lies parallel to surrounding layers of sedimentary rock
- D 3. Igneous rocks _____.
- are formed through the freezing of melt
 - can be produced at the surface of the Earth as well as deep below the surface
 - are the most common type of rocks within the Earth
 - all of the above
 - both a and c
- A 4. When lava crystallizes, _____ are formed.
- extrusive igneous rocks
 - intrusive igneous rocks
 - pyroclastic debris
 - volatiles
- B 5. Felsic lavas are generally _____ mafic lavas. Gassy lavas are generally _____ lavas that have become degassed.
- more viscous than / just as viscous as
 - more viscous than / less viscous than
 - less viscous than / more viscous than
 - less viscous than / less viscous than
 - more viscous than / more viscous than
- A 6. As compared to mafic igneous rocks, felsic igneous rocks _____.
- solidify at lower temperatures
 - solidify at higher temperatures
 - cool and solidify more slowly
 - cool and solidify more quickly
- C 7. Oceanic hot-spot volcanism is associated with _____.
- a wide range of eruptive styles, from effusive to explosive
 - primarily explosive basaltic eruptions such as those recently generated by Mt. Pinatubo and Mt. St. Helens
 - primarily effusive eruptions that produce shield volcanoes and basaltic lava flows
 - effusive eruptions that produce stratovolcanoes and rhyolitic tephras
 - both a and d
- A 8. Continental arc volcanism is associated with _____.
- a wide range of eruptive styles, from effusive to explosive
 - primarily explosive basaltic eruptions such as those recently generated by Mt. Pinatubo and Mt. St. Helens
 - primarily effusive eruptions that produce shield volcanoes and basaltic lava flows
 - phreatomagmatic eruptions that produce cindercones and basaltic lava flows
 - none of the above

- B 9. Pillow basalts attain their distinctive blob-like shapes because their parent lavas do not travel far prior to solidification. Why?
- Because pillow basalts are completely devoid of volatiles and thus travel slowly.
 - Pillow basalts erupt underwater and thus cool very quickly.
 - Pillow basalts are ultramafic and thus freeze at exceptionally high temperatures.
 - Pillow basalts are highly felsic and thus travel slowly.

- C 10. A fast moving flow consisting of a mixture of water and volcanoclastic debris is termed a _____.
- stratovolcano
 - glowing avalanche
 - lahar
 - flood basalt

- D 11. Under what conditions would you expect to see a phreatomagmatic eruption?
- when basaltic lava clogs the chimney and cause back pressure to build into a devastating eruptive force
 - when a landslide on the side of the volcano allows lava and pyroclastic debris to be ejected laterally as well as vertically from the crater; this occurred in 1980 on Mt. St. Helens
 - when volatiles effervesce prior to eruption, leading to a 'a' lava flows at the surface
 - when water is present in or around the magma chamber (where it can turn to steam)

- C 12. Basaltic lavas _____.
- contain a greater proportion of trapped volatiles than rhyolitic lavas
 - are more viscous than rhyolitic lavas
 - contain more iron and magnesium than rhyolitic lavas
 - contain more silica than rhyolitic lavas

- C 13. Of the three primary forms of subaerial volcanoes, _____ consist of a simple, pile of tephra with slopes near the angle of repose.
- shield volcanoes
 - stratovolcanoes
 - cinder cones

- A 14. Olympus Mons, the largest known volcano, is found _____ and is an example of a _____.
- on Mars / shield volcano
 - in Greece / stratovolcano
 - on Io, a moon of Jupiter / cinder cone
 - in Greece / shield volcano
 - on Mars / stratovolcano

- C 15. At continental rifts, vast bodies of basaltic lava flow forth from fissures, forming _____.
- pyroclastic flows
 - ash-fall tuffs
 - flood basalts

Sedimentary Rocks

- D 16. Frost wedging, root wedging, and salt wedging are all examples of _____.
- chemical weathering
 - erosion
 - deposition
 - physical weathering

- A 17. For sediments that are transported to the site of deposition by water, grain size most closely indicates the _____.
- velocity of the water at the moment the sediment settled into the position in the deposit
 - average velocity of the water from the time of erosion until deposition
 - geographic extent of the weathering source rock at the outcrop

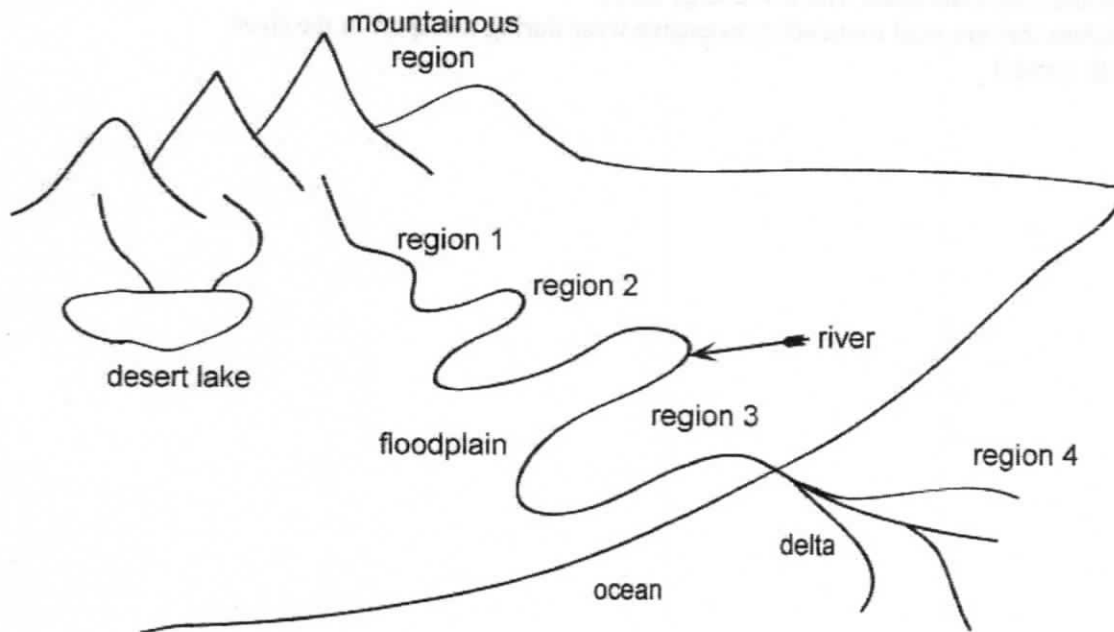
- B 27. Medium- and deep-focus earthquakes occur along _____.
- transform plate boundaries only
 - convergent plate boundaries only
 - all three major types of plate boundaries
 - divergent plate boundaries only
- C 28. Which earthquake severity scale takes subjective estimates of damage and shaking into account when estimating the size of the earthquake?
- moment magnitude scale
 - Moho Scale
 - Mercalli scale
 - Richter scale
- D 29. The point on Earth's surface directly above the point where an earthquake occurs is termed the _____.
- eye of the fault
 - hypocenter
 - vertex
 - epicenter
- A 30. Which of the following media will transmit seismic energy the fastest?
- igneous rock
 - water
 - sedimentary rock
 - sediment
- C 31. Surface waves _____.
- travel more rapidly than body waves
 - are the first waves initially produced in an earthquake
 - produce most of the damage to buildings during earthquakes
 - are the first waves to arrive at a seismograph station after an earthquake
- A 32. Generally, which type of earthquake waves travel fastest?
- body waves
 - surface waves
 - R-waves
 - interior waves
- C 33. Seismic rays follow curved paths in Earth's interior due to _____.
- the influence of abrupt changes in density associated with major contrasts in rock type at depth
 - the spheroidal nature of the Earth itself
 - gradual changes in density with depth beneath the surface
 - the arcuate nature of trenches at subduction zones, where most earthquakes are generated
- A 34. Periods of intermittent sliding on a fault as a result of the release of stress during episodes of displacement, followed by stress buildup to the point that the fault is reactivated is termed _____.
- stick-slip behavior
 - chaotic faulting
 - reverse faulting
 - thrust faulting
- A 35. A primary force opposing motion on all faults is _____.
- friction
 - magnetic attraction among iron-rich minerals
 - gravity
 - Van der Waal's force

The Rock Cycle

- D 45. The majority of the rocks that occur at the *surface* of Earth are _____.
- a. intrusive igneous rocks c. extrusive igneous rocks
 b. metamorphic rocks d. sedimentary rocks
- D 46. Net chemical change in a metamorphic rock induced by reaction with groundwater at temperatures greater than 300 degrees C is termed _____.
- a. foliation b. weathering c. anachronism d. metasomatism
- C 47. Clay minerals within a buried body of slate are recrystallized at high temperatures and pressures to form mica, producing a rock called phyllite; this is an example of _____.
- a. erosion b. diagenesis c. metamorphism d. weathering
- C 48. At the surface, potassium feldspar reacts with water to form clay; this is an example of _____.
- a. diagenesis b. erosion c. weathering d. metamorphism

Sedimentary Settings

The following 4 questions pertain to the diagram shown below.
 Remember to mark the choice that **BEST** answers the question.



- E 49. Which of the following sedimentary rocks is (are) characteristic of deposition in high-energy settings, such as the mountainous region shown in the diagram?
- a. diamictite d. breccia
 b. quartz sandstone e. both a and d
 c. arkose (feldspar-rich) sandstone

B

50. The lake shown in the diagram has 2 inlets but no outlet and is situated in a desert. What type of sedimentary rock is most likely to form as a result of the presence of such a lake in such a setting?
- chert, a biochemical sedimentary rock formed when clams, oysters and snails extract calcium and carbonate from the water to produce a shell
 - an evaporite, composed of halite and/or gypsum that precipitates out of the lake water as it evaporates
 - coal, composed of plant detritus that becomes lithified when it is buried deep beneath the surface (under high temperature and pressure)
 - travertine, a chemical sedimentary rock that is formed by degassing of CO_2 by water at the surface
 - breccia, a clastic sedimentary rock with coarse angular clasts

A

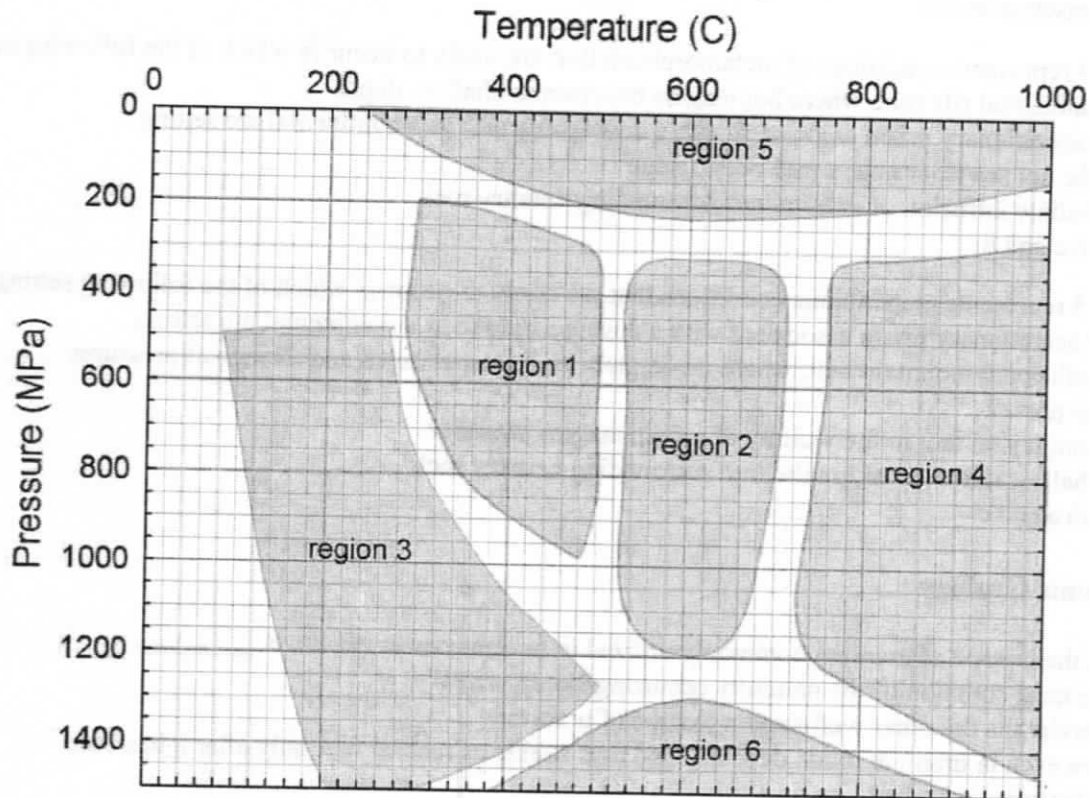
51. As sediment travels downstream from region 1 to region 2, one could expect it to become increasingly rich in which of the following minerals, due to chemical weathering of other minerals?

C

- quartz
 - olivine
 - halite
52. Sediment deposited in region 3 of the diagram is likely to be characterized by which of the following types of clasts?
- angular fragments, characteristic of input from the rapidly eroding mountain slopes
 - coarse quartz sand, transported by medium energy flows
 - silt and clay associated with low energy flows
 - cobbles that are well rounded by extensive wear during transport in the river
 - both c and d

Pressure-Temperature Diagram

The following 6 questions relate to the diagram shown below.
Remember to mark the choice that **BEST** answers the question.



- B** 53. The pressure-temperature conditions enveloped by region 1 are referred to as _____.
- a. blueschist facies
 - b** c. amphibolite
 - d. granulite
 - e. hornfels facies
- B** 54. Region 4 represents metamorphic conditions that are likely to occur in which of the following settings?
- a. the intrusion of a granite into country rock
 - b** b. a continental arc, in the vicinity of a magma chamber where temperatures are high and pressure varies depending on depth
 - c. a stable continental interior, where moderate temperatures and a range of pressures may prevail depending on depth
 - d. deep in the continental crust where pressures are high and temperatures can vary depending on plate tectonic setting
 - e. the accretionary prism associated with a downgoing slab in a continental arc setting
- C** 55. The pressure-temperature conditions enveloped by region 2 are referred to as _____.
- ~~a. both a and b~~
 - b. blueschist facies
 - c** c. amphibolite facies
 - d. blueschist
 - e. amphibolite

- B 56. The pressure-temperature conditions enveloped by region 3 are referred to as _____.
 a. blueschist facies d. blueschist
 b. amphibolite facies e. both a and d
 c. greenschist facies
- B 57. Region 3 represents conditions of metamorphism that are likely to occur in which of the following settings?
 a. a continental rift zone where hot magma has risen to shallow depth
 b. the accretionary prism associated with a downgoing slab in a continental arc setting
 c. in the hot sea floor near a mid-ocean ridge
 d. a shallow intrusion of granite into surrounding country rock
 e. both c and d
- D 58. Region 5 represents metamorphic conditions that are likely to occur in which of the following settings?
 a. the accretionary prism associated with a downgoing slab in a continental arc setting
 b. a collisional mountain belt, where moderately high temperatures and a range of pressures may prevail
 c. a continental arc, in the vicinity of a deep magma chamber
 d. a shallow intrusion of granite into surrounding country rock
 e. both a and c

Economic Geology

- C 59. U-235, the isotope of uranium commonly utilized in nuclear power plants, is _____.
 a. the most common of the naturally occurring isotopes of U
 b. heavier than the other well-known isotope of uranium
 c. rare even in uranium oxide deposits, and thus usable as reactor fuel only after it has been extensively enriched
 d. none of the above
- A 60. Mineral-rich veins within plutons, deposited by hot groundwater into fractures within the rock, characterize _____.
 a. hydrothermal deposits c. placer deposits
 b. residual mineral deposits d. sedimentary deposits
- D 61. Which fossil fuel, oil or gas, is found at greater depths within Earth, and why?
 a. oil, because it is more stable at high temperature
 b. gas, because it is more stable at low pressures
 c. oil, because it is more stable at low pressures
 d. gas, because it is more stable at high temperatures
- B 62. Shale, salt, and fine-grained limestone that is not fractured are all good candidates to serve as _____ within an oil field.
 a. a source rock c. a reservoir rock
 b. a seal rock d. a carbonate rock