37 multiple choice at 2 pts each = 74 pts
Short answer (variable pts) = 24 pts
Freebie multiple choice (#14) = 2 pts
total = 100 pts

Name_____
Section (9am / 12pm)

Read each question carefully. Choose the BEST answer among those available for multiple choice questions. Write your own answer where indicated.

1) Of Earth's layers, which is *most* liquid?

a) inner core, b) outer core, c) lower mantle, d) upper mantle, e) crust, f) atmosphere

2) Which of the layers listed in question 1 convect?

a) a, b, & c, b) b, c, & d, c) c, d, & e, d) d, e, & f

3) With a few words, describe the result of the "Iron Catastrophe" on Earth's internal structure.

The density stratification of Earth's internal layers. (2 points for density, 2 points for layers)

4) What drives convection?

a) temperature differences, b) pressure, c) chemical variability, d) density contrasts, e) viscosity

5) Convection in which of Earth's layers generates our magnetosphere?

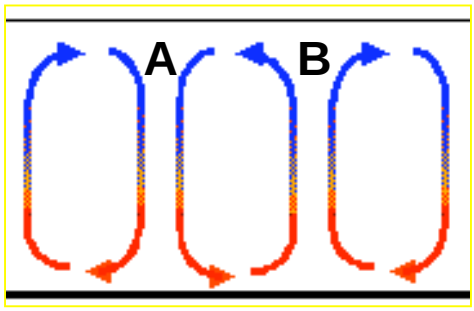
a) inner core, b) outer core, c) lower mantle, d) upper mantle, e) crust, f) atmosphere

6) Convection in which of Earth's layers generates hotspots?

a) inner core, b) outer core, c) lower mantle, d) upper mantle, e) crust, f) atmosphere

7) Convection in which of Earth's layers generates divergent and convergent boundaries?

a) inner core, b) outer core, c) lower mantle, d) upper mantle, e) crust, f) atmosphere



A - convergent (2 pts)
B - divergent (hotspot OK) (2 pts)

8) In the space above, indicate which type of plate tectonic boundaries the locations of A and B correspond to on Earth's surface.

9) What tectonic setting would be most useful for calculating absolute plate motion?

a) mid-ocean ridge, b) continental rift, c) continental convergence, d) oceanic hotspot, e) continental transform fault

10) What two pieces of information do we need to calculate the speed of a tectonic plate?

a) volcano orientation and age, b) volcano age and height, c) volcano separation and height, d) volcano separation and orientation, e) volcano separation and age

11) Which of the discoveries supporting plate tectonics listed below was made by Wegener?

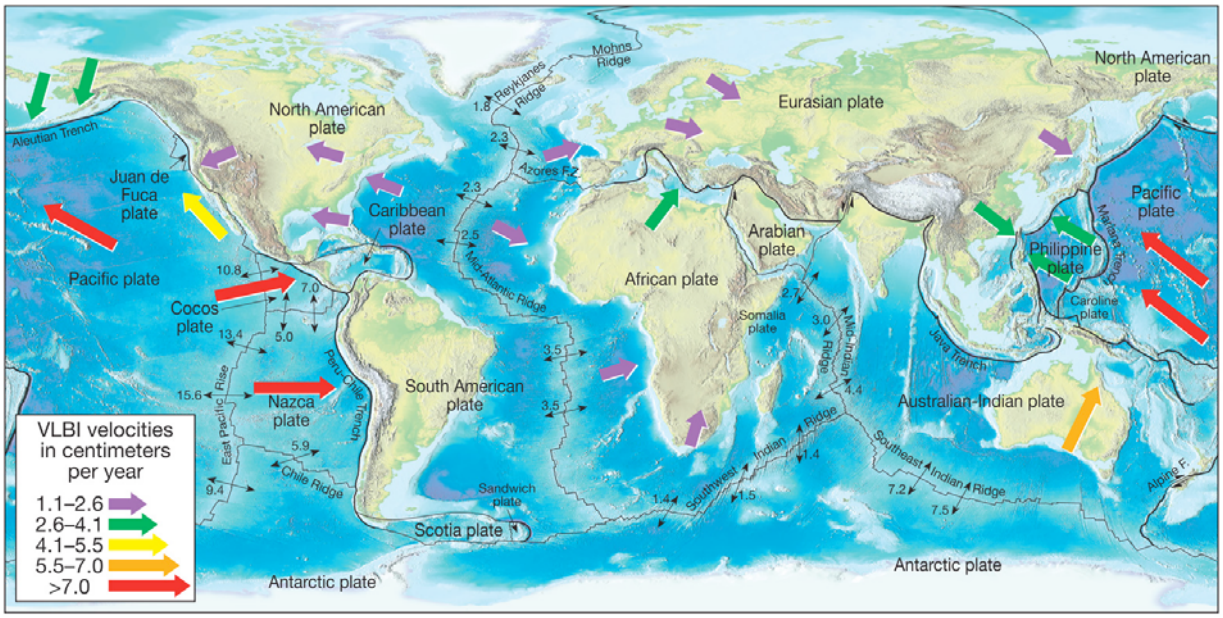
a) deep earthquakes at subduction zones, b) ancient climates, c) seafloor spreading, d) hotspot tracks, e) paleomagnetism

12) Which landforms would you expect to find at a divergent oceanic boundary?

a) axial valley and mid-ocean ridge, b) axial valley and ocean trench, c) mid-ocean ridge and volcanic island, d) volcanic island and axial valley, e) volcanic island and ocean trench

13) What are two geologic processes that you would expect to occur at oceanic-continental convergence zones?

subduction, earthquakes, volcanism…(2 pts each for two processes)



~~**14)** With the help of the map above, what kind of plate tectonic boundary is between the Caribbean Plate and the African Plate?~~

~~a) oceanic-convergent, b) continental transform, c) continental divergent, d) oceanic divergent, e) oceanic hotspot~~ Supposed to say South American plate (not Caribbean) so I threw it out

15) What type of plate boundary is between the Pacific Plate and the North American plate?

a) oceanic divergent, b) ocean-continent convergent, c) continent-continent convergent, d) oceanic convergent, e) continental divergent – two OK answers here

16) What type of plate boundary is between the African Plate and the Somalia Plate?

a) continental convergent, b) oceanic convergent, c) continental transform, d) continental divergent, e) continental hotspot

17) List the three types of particles that make up an atom.

protons, neutrons, electrons (2 pts each, 6 pts total)

18) Which types of atomic particles allow one element to bond with another?

a) electrons, b) quarks, c) neutrinos, d) ions, e) atoms

19) How would you describe the valence electron shells of MOST of Earth's elements?

a) filled, b) ¾ filled, c) ½ filled, d) ¼ filled, e) not filled

20) What is the name of the bond in which electrons are transferred from one atom to another?

a) ionic bond, b) Van der Waals bond, c) atomic bond, d) covalent bond, e) polarized bond

21) What is the name of the bond in which electrons are shared between multiple atoms?

a) ionic bond, b) Van der Waals bond, c) atomic bond, d) covalent bond, e) polarized bond

22) What two elements make up the most common rocks (90%) in the Earth's crust?

a) iron & nickel, b) magnesium & sodium, c) sodium & chlorine, d) oxygen & aluminum, d) oxygen & silicon

23) What is the name of the common crustal rocks listed in Question 22 based on their chemical composition?

silicates (2 pts)

24) Which of the rock types listed below are among the remaining 10% of Earth's crustal materials?

a) igneous rocks, b) rhyolite, c) carbonates, d) granite, e) basalt

25) Which of the rocks listed below are related to the halide group?

a) limestone, b) gypsum, c) gabbro, d) sulfide mound, e) chalk

26) List one economically valuable material derived from the sulfate group of rocks.

copper, silver, gold, zinc, other precious metals, etc…(2 pts for one correct answer)



27) Examine the image to the right. What three physical properties would be MOST useful to you in identifying this rock just from the photo?

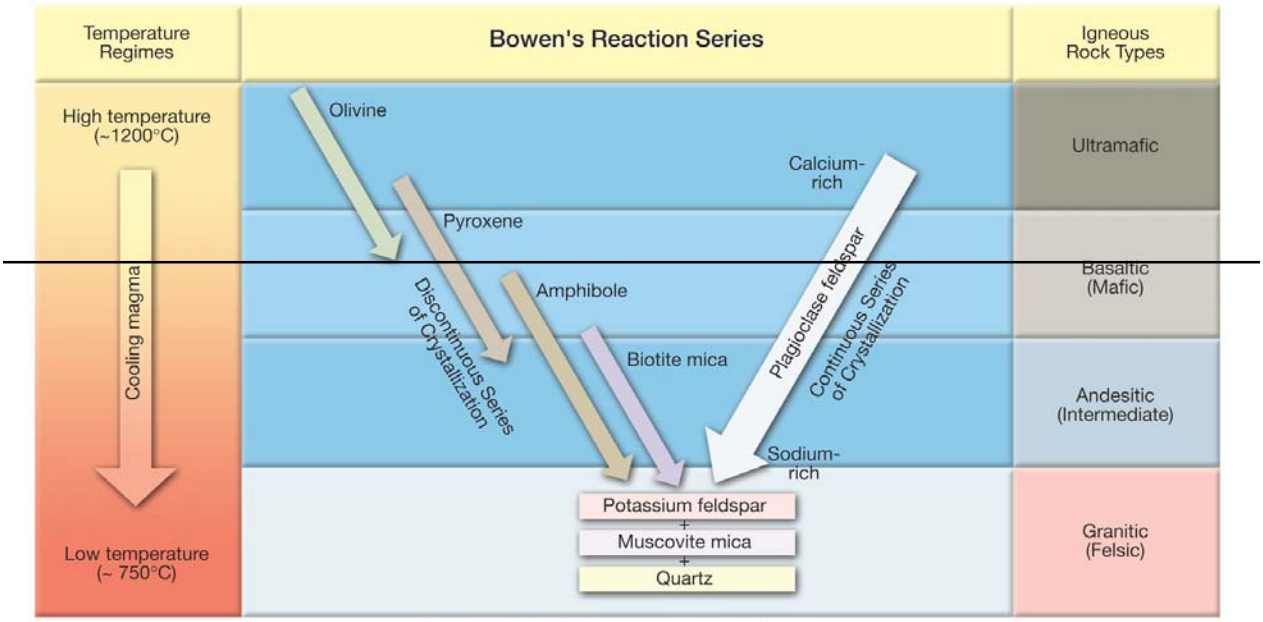
a) luster, hardness, color, b) streak, cleavage, fracture, c) crystal form, hardness, specific gravity, d) color, crystal form, luster, e) color, streak hardness

28) What type of plate tectonic setting is responsible for the vast majority of the Earth's eruptions?

a) convergent oceanic, b) divergent oceanic, c) oceanic-continental convergent, d) divergent continental, e) oceanic hotspot

29) What is the second most common location for eruptions on Earth?

a) convergent boundary, b) divergent boundary, c) transform fault, d) hotspot



Use the image above to answer questions 30-33.

30) At the time indicated by the location of the horizontal black line on the figure, what is the approximate temperature of the magma chamber?

a) 1200ºC, b) 1100ºC, c) 1000ºC, d) 900ºC, e) 800ºC – both answers OK

31) At that same time, what mineral is completely crystallized (solid) and therefore no longer a part of the magma?

a) quartz, b) plagioclase feldspar, c) amphibole, d) pyroxene, e) olivine

32) At that same time, what is still completely liquid?

a) quartz, b) plagioclase feldspar, d) pyroxene, e) olivine

33) If this magma erupted on Earth's surface at this time, what would the name of the rocks be?

basalt (2 pts)

34) Which plate tectonic setting is most likely to produce an eruption of basaltic lava?

a) oceanic-continental convergent, b) oceanic transform, c) continent-continent convergent, d) oceanic hotspot, e) continental hotspot

35) Which plate tectonic setting is most likely to produce an eruption of andesitic lava?

a) oceanic-continental convergent, b) oceanic transform, c) continent-continent convergent, d) oceanic hotspot, e) continental hotspot

36) Which plate tectonic setting is most likely to produce an eruption of rhyolitic lava?

a) oceanic-continental convergent, b) oceanic transform, c) continent-continent convergent, d) oceanic hotspot, e) continental hotspot

Use the image to the right to answer questions 37-41.



37) What type of lavas would you expect this volcano to erupt?

a) basaltic, b) granitic, c) andesitic, d) rhyolitic, e) gabbroic

38) What is the relative silica content of the lavas you would expect to find here?

a) low, b) intermediate, c) high

39) What is the level of explosivity you would expect from the chemistry of the lavas of this volcano?

a) not explosive, b) somewhat explosive, c) fairly explosive, d) extremely explosive

40) What plate tectonic setting has probably produced this volcano?

a) divergent, b) convergent, c) transform, d) hotspot

41) What two types of eruptive products might you expect to get at this volcano?

a) lava & gas, b) cinder & lava, c) pahoehoe & aa, d) aa & cinder, e) lava & ash

42) What two types of dangerous flows are related to eruptions at convergent boundaries?

a) pahoehoe & mudflows, b) aa & pahoehoe, c) aa & pyroclastic flows, d) aa & ash, e) mudflow & pyroclastic flow

43) What shape of volcano would you expect to find at a continental hotspot?

a) shield, b) ridge, b) cone, d) caldera, e) axial valley

44) What shape of volcano would you expect to find at an oceanic hotspot?

a) shield, b) ridge, b) cone, d) caldera, e) axial valley

45) What shape of volcano would you expect to find at a convergent boundary?

a) shield, b) ridge, b) cone, d) caldera, e) axial valley