Volcanoes
1. Any molten silicate material, whether below the surface or on top is known as a:
   a) lava    b) intrusion    c) pluton   d) magma   e) volcano.
2. The earliest part of a basaltic lava flow is relatively cool and viscous. This part of the flow forms a rubbly surface called:
   a) aa    b) pahoehoe    c) ash flow   d) nuée ardente   e) air fall.
3. A felsic (silicic) volcanic rock typical of continental regions which is commonly light in color and has a relatively low density ($\rho = 2.5\,\text{g/cm}^3$) is a:
   a) andesite    b) basalt    c) gabbro   d) rhyolite   e) lherzolite.
4. Which of the following is an example of a basalt volcano?
   a) Mt St. Helens   b) Yellowstone   c) Mauna Loa   d) Mt Pinatubo   e) Mt. Fuji
5. Which of the following is an example of an andesite volcano?
   a) Kilauea  b) Yellowstone   c) Mauna Loa   d) Mt Pinatubo  e) Mt. Fuji

Earthquakes
7. Most earthquakes occur:
   a) at depths greater than 400 km  b) at depths less than 100 km            c) at passive continent margins
   d) in the central regions of plates (cratons)  e) in the lower mantle.
8. The deepest earthquakes occur at a depth of about:
   a) 50km  b) 100km  c) 400km   d) 670km      e) 2900km.
9. Seismic waves that travel through the interior of the Earth and propagate by shear (movement perpendicular to propagation) are:
   a) P-waves   b) body-waves   c) tsunamis  d) S-waves  e) surface waves
10. The point on the Earth’s surface directly above the rupture that causes an earthquake is known as the:
    a) fracture zone  b) Benioff zone  c) subduction zone  d) focus  e) epicenter
11. The exact location of the epicenter of an earthquake can generally be determined from:
    a) the time difference between body and surface wave arrivals at three different stations
    b) The time difference between P- and S-wave arrival times at three stations to determine distance and then using triangulation.
    c) the exact time of the surface wave arrivals at three different locations
    d) the direction of first movement of the S-wave arrivals at three different stations.
    e) the magnitude of the P-waves at three different stations.
12. What observation led to the conclusion that the Earth has a liquid outer core?
    a) Earth’s gravity field  b) P-wave shadow   c) S-wave shadow   d) Polar wandering
    e) Seismic reflection from 660km

Interior
13. The Earth's mantle is composed of:
    a) solid silicate rock  b) molten silicate (magma)  c) molten iron metal
    d) solid iron metal  e) solid granite.
14. The Earth’s outer core is composed of
15. The Earth's magnetic field is caused by:
   a) permanent magnetization of magnetic minerals in the crust
   b) permanent magnetization of the solid iron core.
   c) electrical and convection currents in the molten outer core.
   d) the solar wind
   e) electrical currents in the mantle.

16. The oceanic crust is:
   a) thick (>30km), dense (ρ > 3.0), and old (>200 Myrs)
   b) thick (>30km), light (ρ < 3.0), and old (>200 Myrs)
   c) thin (<30km), light (ρ < 3.0), and young (<200 Myrs)
   d) thin (<30km), dense (ρ > 3.0), and young (<200 Myrs)
   e) thick (>30km), light (ρ < 3.0), and young (<200 Myrs).

Climate

17. In the past 50 years, the CO₂ content of Earth’s atmosphere:
   a) has decreased by almost 20 percent to 3150 ppm
   b) has remained nearly constant at 350 ppm.
   c) has increased by more than 5 percent to 3880 ppm.
   d) has increased by almost 10 percent to about 388 ppm
   e) has increased by almost 20 percent to 388 ppm.

18. The current concentration of CO₂ in the atmosphere is about:
   a) 0.004%  b) 0.04%  c) 0.4%  d) 4%  e) 40%

19. A greenhouse gas is one that:
   a) is transparent in the visible, but absorbs in the infrared
   b) is soluble in green glass
   c) is transparent in the infrared, but absorbs visible radiation
   d) absorbs green light
   e) is transparent to green light, but absorbs blue and red light

Weathering erosion, mass wasting

20. The air-fluidized, high-velocity descent of a mass of debris and/or snow and ice a is known as a(n)
   a) slump  b) slip  c) landslide  d) debris flow  e) avalanche.

21. The water-fluidized flow of volcanic ash and rock downslope is a(n):
   a) avalanche  b) debris flow  c) rockfall  d) lahar  e) creep

22. The processes of oxidation, hydration, and biological activity act to break down rocks at the Earth's surface. Together, these processes constitute:
   a) acid rain  b) mechanical weathering  c) chemical weathering  d) mass wasting  e) metasomatism.

23. Chemical weathering is most rapid which type of climate:
   a) cold and dry  b) cool and wet  c) cool and dry  d) warm and wet  e) warm and dry
Essays

What kind of volcanoes (basalt, andesite, rhyolite, etc) would you expect at
  Oceanic Divergent plate boundaries?
  Ocean-ocean convergent boundaries?
  Ocean-continent convergent boundaries?
  Continent-continent convergent boundaries?

What are some of the main features of the Earth’s climate record over the past 500,000 years and how do we know about them?

What is the difference between P and S waves?

What are the main types of evidence we have for the composition and structure of Earth’s interior?

What is a greenhouse gas and how does it act to increase Earth’s surface temperature?

What are the chemical weathering products of the various minerals in granite and why does clay make up more than 50% of the sediment derived from granite?