

LexSciBowl

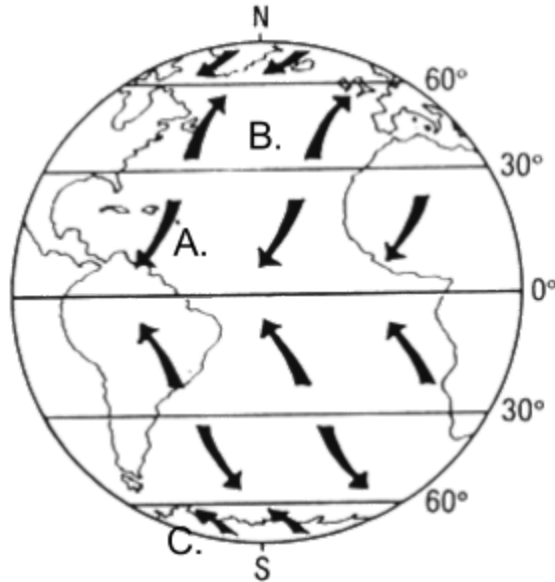
Earth & Space Science Test

Welcome to the LexSciBowl Earth & Space Science test! You will have 60 minutes to complete 60 questions of this test. It is to your advantage to answer every question. Please note that proctors will not answer any questions regarding the questions unless they deem it a problem of ambiguity. Please make your answers as clear as possible for short answer questions.

Part A:

Every correct answer is worth 1 point.

- 1) What are the four layers of Earth's atmosphere from closest to farthest from Earth's surface?
- 2) What is the process by which sediments get compacted to form rock?
- 3) What are the two most abundant elements in the Earth's crust?
- 4) List the planets in the Solar System by increasing distance to the Sun.
- 5) Between which two planets is the Asteroid belt located?
- 6) What is the name of the largest volcano in the solar system? Where is it located?
- 7)
 - a. How old is the universe?
 - b. How old is the Earth?
- 8) What mineral on the Mohs Hardness Scale is essential for the formation of ruby and sapphire?
 - a) Topaz
 - b) Diamond
 - c) Corundum
 - d) Fluorite
- 9) During what phase(s) of the moon could a lunar eclipse occur?
- 10) During what phase(s) of the moon does a neap tide occur?
- 11) What kind of front is formed when a mass of cold air overtakes a mass of warm air?
- 12) An air mass from the Gulf of Mexico would be classified as:
 - a) Continental Polar
 - b) Continental Tropical
 - c) Maritime Polar
 - d) Maritime Tropical
- 13) Label the global wind belts in A., B., and C.



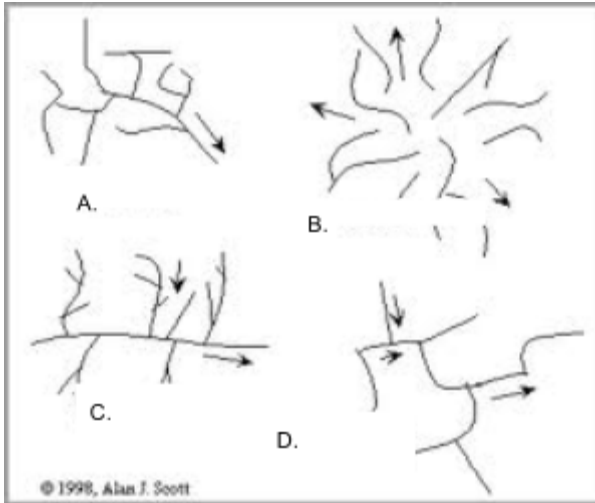
- 14) a. Which layer of the sun is the part that we can see?
b. Which layer of the sun is the hottest?
- 15) What is the phenomenon that causes winds in the Northern Hemisphere to deflect to the right?
- 16) What is the name of the ancient supercontinent that existed on Earth 200 million years ago?
- 17) The North Star is also known by what name?
- 18) What are the four main layers of Earth's interior from innermost to outermost?
- 19) In what three geologic periods did the now-extinct dinosaur species exist?
- 20) On a topographic map, lines that connect points of the same elevation are termed:
 - a) Isobars
 - b) Contour lines
 - c) Bathymetric lines
 - d) Benchmarks
- 21) Of the seismic waves - S wave, P wave, Love wave, Rayleigh wave - which are body waves?
Which are surface waves?
- 22) Of the seismic waves - S wave, P wave, Love wave, Rayleigh wave - which are first and last respectively to reach the recording station?
- 23) What astronomer is credited with proposing the heliocentric model of the solar system in the 16th century?
- 24) Name the NASA program that sent 10 satellites between 1962 and 1973 to investigate Mercury, Venus, and Mars.
- 25) What is the long, winding ridge of stratified sand and gravel formed by glaciers?
- 26) What scale is used to measure wind speed in relation to observed conditions at sea or on land?

- 27) Identify each of the following rocks as igneous, sedimentary, or metamorphic:
- i. Quartzite
 - ii. Chert
 - iii. Slate
 - iv. Scoria
- 28) Approximately what percent of the Sun is composed of hydrogen?
- a) 71%
 - b) 84%
 - c) 90%
 - d) 99%
- 29) What are the four Galilean moons?
- 30) Which soil horizon constitutes the “subsoil”?
- a) O
 - b) A
 - c) E
 - d) B

Part B:

Every correct answer is worth 2 points.

- 31) What type(s) of clouds are characteristic of cold fronts? What type(s) are characteristic of warm fronts
- 32) What kind(s) of precipitation are characteristic of cold fronts? What kind(s) are characteristic of warm fronts?
- 33) In which layers of the atmosphere does temperature increase with increasing altitude? Why?
- 34) Describe the life cycle of a mid-latitude cyclone in terms of front formation.
- 35) Order the following by increasing eruption explosivity:
- I. Vulcanian eruption
 - II. Plinian eruption
 - III. Strombolian eruption
 - IV. Pelean eruption
- 36) Of the three basic magma types, basaltic, andesitic, rhyolitic:
- a. Which is most explosive?
 - b. Which has the lowest silica content?
- 37) Label the following drainage patterns:



- 38) What is the spectral class of the Sun?
- 39) What is the biome characterized by shrubland, and is found in Western California and the Mediterranean?
- 40) What concept describes a crustal plate floating in gravitational balance?
- 41) In geological time, what era is considered the “Age of Mammals”?
- 42) What geological periods together are considered the “Age of Fishes”?
- 43) Which of the following are warm ocean currents:
- i. Gulf Stream
 - ii. Kuroshio Current
 - iii. Labrador Current
 - iv. Benguela Current
- 44) Identify the element that corresponds to each mineral ore:
- i. bauxite
 - ii. pyrite
 - iii. galena
- 45) Which female astronomer is credited with determining the relationship between the period of intrinsic luminosity of Cepheid variable stars and their average luminosity?
- 46) What type of fracture do minerals that break in a glass-like manner have?
- 47) Which of the following stars is incorrectly paired with its constellation?
- a) Altair - Aquila
 - b) Procyon - Canis Major
 - c) Arcturus - Bootes
 - d) Aldebaran - Taurus
- 48) What eon, era, period, and epoch do we currently live in?

49) Which is first to crystallize in the Bowen's reaction series?

- a) Quartz
- b) Olivine
- c) Biotite Mica
- d) Pyroxene

50) Why is there an S wave shadow zone?

Part C:

Every correct answer is worth 3 points.

51) What is the widely accepted cosmological model that describes the formation of the solar system?

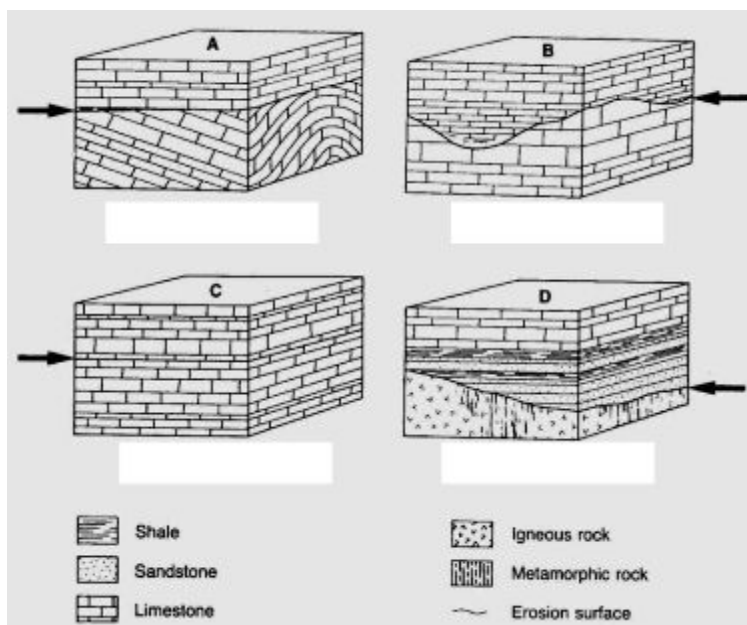
52) Which of the following minerals are inosilicates:

- i. Olivine
- ii. Amphibole
- iii. Pyroxene
- iv. Mica

53) Identify the "Big Five" mass extinctions events.

54) Label features A-D as 1. Nonconformity, 2. Angular unconformity, 3. Paraconformity, 4.

Disconformity:



55) What is the name of the effect by which a spectral line is split into several components in the presence of a static magnetic field?

56) What 3 stars make up the Summer Triangle?

- 57) Categorize the following as clastic, biological, or chemical:
- i) Coquina
 - ii) Breccia
 - iii) Gypsum
 - iv) Shale
- 58) Rigel is the largest blue supergiant star in Orion. Give its absolute magnitude to the nearest integer (within one of its accepted value) and its spectral class.
- 59) Which of the following can result from the obstruction of river flow by levees?
- a) Backswamp
 - b) Alluvial fan
 - c) Oxbow lake
 - d) Yazoo tributary
- 60) What is the name of the atoll that marks the northern end of the Hawaii-Emperor seamount chain, one of the longest underwater mountain ranges as a result of volcanic hotspot activity?