Science Bowl Practice Questions – Earth Science

1. Multiple Choice: The ice sheet that covered northeastern United States came from which of the following locations?
   w) Labrador center in eastern Canada
   x) Keewatin center in central Canada
   y) Cordilleran center in the Rocky Mountains
   z) Greenland
   ANSWER: W -- LABRADOR CENTER IN EASTERN CANADA

2. Multiple Choice: A volcano which is composed of lava flows and pyroclastic material and which is steep-sided and very tall is known as:
   w) Syncline
   x) Composite cone
   y) Anticline
   z) none of these
   ANSWER: X -- COMPOSITE CONE

3. Multiple Choice: The solidified lava of a volcano belongs to which rock family? Is it:
   w) igneous
   x) metamorphic
   y) sedimentary
   z) fossilized
   ANSWER: W -- IGNEOUS

4. Multiple Choice: In geological studies, a dome shaped intrusion is called a:
   w) volcanic neck
   x) laccolith
   y) nuee ardente
   z) caldera
   ANSWER: X -- LACCOLITH

5. Multiple Choice: Shiprock in New Mexico is a:
   w) laccolith
   x) volcanic neck
   y) cinder cone
   z) caldera
   ANSWER: X -- VOLCANIC NECK
6. Multiple Choice: Iceland has a great deal of volcanic activity. The reason for this is:

w) it was formed above a mid-ocean rift.
x) it is part of the "Ring of Fire".
y) two tectonic plates are rubbing against each other under Iceland.
z) the American plate is diving under the European plate in this region.

ANSWER: W -- IT WAS FORMED ABOVE A MID-OCEAN RIFT.

7. Multiple Choice: Of the following, the rock that is most resistant to both chemical and mechanical weathering is:

w) shale
x) limestone
y) marble
z) quartzite

ANSWER: Z -- QUARTZITE

8. Short Answer: There is a specific term used by geologists to describe rock weathering in which shells or plates are broken away from a rock leaving it rounded in appearance. What is this term?

ANSWER: EXFOLIATION

9. Short Answer: Biosphere describes the earth realm where life occurs What describes the entire solid earth realm and is composed of mineral matter?

ANSWER: LITHOSPHERE

10. Multiple Choice: Which of the following energy sources does NOT originally come from the Sun?

w) wind
x) Ocean thermal energy conversion
y) geothermal
z) hydroelectric

ANSWER: Y – GEOTHERMAL

11. Short Answer: What is the name of the atmosphere layer of upwardly diminishing temperature situated above the stratosphere and topped by the mesopause?

ANSWER: MESOSPHERE

12. Short Answer: What is the term used to measure the intensity of solar radiation and is equal to one gram calorie per square centimeter per minute?

ANSWER: LANGLEY

13. Multiple Choice: What percentage of the earth's atmosphere does O2 comprise?

w) 75%
x) 50%
y) 21%
z) 32%

ANSWER: Y -- 21%

14. Short Answer: What gas makes up the majority of our atmosphere?

ANSWER: NITROGEN
15. Multiple Choice: The tanning rays of the sun are called:

w) infrared rays  
x) visible light  
y) ultraviolet rays  
z) gamma rays

ANSWER: Y -- ULTRAVIOLET RAYS

16. Multiple Choice: What is the relative humidity when the absolute humidity is 3 grams per cubic meter and the air has a capacity of 12 grams per cubic meter?

w) 4%  
x) 9%  
y) 25%  
z) 400%

ANSWER: Y -- 25%

17. Multiple Choice: While many different gases are found in the atmosphere, a number do NOT contribute significantly to solar heating of the atmosphere. Which TWO of the following gases do NOT absorb much heat?

w) carbon dioxide  
x) nitrogen  
y) water vapor  
z) oxygen

ANSWER: X and Z -- NITROGEN and OXYGEN
18. Multiple Choice: Global climate change is being attributed to the atmospheric increase in what two gases produced by human activities?

w) oxygen and hydrogen  
x) ozone and methane  
y) nitrous oxide and sulfur dioxide  
z) methane and carbon dioxide  
e) ozone and carbon monoxide

ANSWER: Z -- METHANE AND CARBON DIOXIDE

19. Short Answer: To within 5%, how much has atmospheric CO2 concentration INCREASED since the year 1800?

ANSWER: 25%

20. Multiple Choice: The concentration of carbon dioxide in the atmosphere is in the range of:

w) 1-10 parts per million  
x) 10-100 parts per million  
y) 100-1000 parts per million  
z) 1000-10,000 parts per million

ANSWER: Y -- 100-1000 PARTS PER MILLION (the exact number is 350 ppm as of the time of this article)

21. Short Answer: The ozone layer is located in which region of the atmosphere?

ANSWER: STRATOSPHERE

22. Multiple Choice: In geological studies, all of the following are TRUE of P waves except that they:

w) are body waves  
x) travel like sound waves  
y) can pass through liquids  
z) are slower than S waves

ANSWER: Z -- ARE SLOWER THAN S WAVES

23. Multiple Choice: Which of the following terms is used to describe the appearance of a mineral in transmitted light? Is it:

w) diaphaneity (pron: die-ah-fah-na-ah-tee)  
x) translucence  
y) opaqueness  
z) porosity

ANSWER: W -- DIAPHANEITY

24. Multiple Choice: In geological studies, arkose contains which of the following minerals which gives it a reddish color?

w) orthoclase  
x) calcite  
y) aragonite (pron: a-rag-o-nite)  
z) quartz

ANSWER: W -- ORTHOCLASE

25. Multiple Choice: Which one of the following minerals does NOT contain silica tetrahedrons?
w) quartz  
x) muscovite  
y) halite  
z) orthoclase  

**ANSWER: Y – HALITE**

26. Multiple Choice: Which of the following minerals is noted for its one perfect cleavage?

w) calcite  
x) muscovite  
y) quartz  
z) pyrite  

**ANSWER: X -- MUSCOVITE**

27. Multiple Choice: Which of the following gases is given off in the acid test of a carbonate mineral?

w) chlorine  
x) nitrogen  
y) carbon dioxide  
z) sulfur dioxide  

**ANSWER: Y -- CARBON DIOXIDE**

28. Multiple Choice: Fine parallel lines, or striations, are most likely to be seen on a cleavage surface of which of the following minerals?

w) quartz  
x) orthoclase  
y) hornblende  
z) plagioclase (pron: play-gee-o-klase)  

**ANSWER: Z – PLAGIOCLASE**
29. Multiple Choice: Which of the following minerals is NOT a silicate?

w) orthoclase  
x) muscovite  
y) augite (pron: aw-jIt)  
z) magnetite  

ANSWER: Z – MAGNETITE  

30. Multiple Choice: Which of the following pairs contains one igneous and one sedimentary rock?

w) shale and marble  
x) sandstone and quartzite  
y) granite and limestone  
z) obsidian and gneiss  

ANSWER: Y -- GRANITE AND LIMESTONE  

31. Multiple Choice: Which of these pairs of minerals are always found in granites?

w) muscovite and calcite  
x) quartz and orthoclase  
y) hornblende and talc  
z) augite and magnetite  

ANSWER: X -- QUARTZ AND ORTHOCLASE  

32. Multiple Choice: An example of a rock whose minerals have been crushed into thin sheets or bands is:

w) shale  
x) schist  
y) conglomerate  
z) granite  

ANSWER: X -- SCHIST  

33. Multiple Choice: The hydrolysis of orthoclase results in the formation of:

w) shale  
x) kaolin  
y) lime  
z) hydrochloric acid  

ANSWER: X – KAOLIN
34. Multiple Choice: The deposits of loess in the United States probably originated as which of the following?

w) talus
x) rock flour
y) humus
z) geyserite

ANSWER: X -- ROCK FLOUR

35. Multiple Choice: This sedimentary rock was used to build the Pantheon and the Colosseum:

w) marble
x) travertine
y) sandstone
z) ironstone

ANSWER: X -- TRAVERTINE

36. Short Answer: What is another name for the semi-precious stone heliotrope?

ANSWER: BLOODSTONE

37. Short Answer: Rocks are classified depending upon how they are formed. In which class would slate be found?

ANSWER: METAMORPHIC

38. Multiple Choice: Which of the following is an igneous rock?

w) Granite
x) Shale
y) Coal
z) Slate

ANSWER: W – GRANITE

39. Multiple Choice: Which of the following is a metamorphic rock?

w) sandstone
x) granite
y) quartz
z) marble

ANSWER: Z – MARBLE
40. Multiple Choice: The black sand of the Hawaiian Islands is composed of which of the following?

w) dark limestone
x) quartz
y) gypsum
z) basalt

ANSWER: Z -- BASALT

41. Short Answer: Name the clay mineral produced by the alteration of potash feldspar which is also used in ceramics.

ANSWER: KAOLINITE

42. Multiple Choice: All of the following are examples of chemically precipitated sedimentary rock except:

w) limestone
x) sandstone
y) dolomite

ANSWER: X -- SANDSTONE

43. Short Answer: Name the extremely fine-grained, wind-blown clay particularly characteristic of the arid and semi-arid southwestern United States, Mexico and South America. This material was used by the southwestern Indians and Mexicans for constructing huts and buildings from prehistoric times.

ANSWER: ADOBE

44. Multiple Choice: Which of the following materials is the hardest?

w) calcite
x) silicon carbide
y) topaz
z) quartz

ANSWER: X -- SILICON CARBIDE

45. Multiple Choice: Igneous rocks that form from magma are known as:

w) minerals
x) granite
y) intrusive rocks
z) gneiss (pron: nice)

ANSWER: Y -- INTRUSIVE ROCKS

46. Multiple Choice: The mineral halite is:

w) potassium chloride
x) sodium chloride
y) calcium chloride
z) calcium bromide

ANSWER: X -- SODIUM CHLORIDE

47. Multiple Choice: What is the name of the white clay which has been used for thousands of years in the fabrication of ceramic bodies? Is it:

w) Talc
x) Kaolin
y) Feldspar
z) Quartz

ANSWER: X -- KAOLIN

48. Multiple Choice: An agate is a form of what mineral?

w) magnetite
x) feldspar
y) quartz
z) copper

ANSWER: Y – QUARTZ

49. Multiple Choice: Which of the following is the name of the partly melted rock layer on which the plates move?

w) lithosphere
x) asthenosphere
y) hydrosphere
z) outer core

ANSWER: X -- ASTHENOSPHERE

50. Multiple Choice: Which of the following areas is closest to the total surface area of the earth in square kilometers?

w) 500 million
x) 500 billion
y) 500 thousand
z) 5 billion

ANSWER: W -- 500 MILLION
51. Multiple Choice: We know that the OUTER core is liquid because:

w) P waves pass through it  
x) S waves pass through it  
y) P waves cannot pass through it  
z) S waves cannot pass through it

ANSWER: Z -- S WAVES CANNOT PASS THROUGH IT

52. Short Answer: It is 9:00 p.m. in Greenwich, England. You are on a ship whose local time is 6:00 p.m. What is the longitude of your ship?

ANSWER: 45 DEGREES WEST

53. Multiple Choice: Field capacity represents the maximum quantity of water held:

w) in the soil against the force of gravity  
x) in the ground water zone  
y) in the intermediate zone  
z) below the water table

ANSWER: W -- IN THE SOIL AGAINST THE FORCE OF GRAVITY

54. Multiple Choice: Trade winds are persistent easterly winds develop between:

w) subtropical high pressure and equatorial doldrum  
x) subtropical high pressure and subpolar low pressure  
y) westerlies and polar highs  
z) none of the above

ANSWER: W -- SUBTROPICAL HIGH PRESSURE AND EQUATORIAL DOLDRUM

55. Multiple Choice: An open-ocean community is also called a:

w) pelagic community (pron: pe-laj-ick)  
x) benthic community (pron: ben-thik)  
y) lentic community (pron: len-tick)  
z) lotic community (pron: lot-ick)

ANSWER: W -- PELAGIC COMMUNITY

56. Multiple Choice: A lake or pond community is also known as a:

w) pelagic community (pron: pe-laj-ick)  
x) benthic community (pron: ben-thick)  
y) lentic community (pron: len-tick)  
z) lotic community (pron: lot-ick)

ANSWER: Y -- LENTIC COMMUNITY

57. Short Answer: What is the name given to a region where one plate of the earth's crust is sliding under another?

ANSWER: SUBDUCTION ZONE

58. Multiple Choice: The tectonic plates on which India and the adjacent portion of Asia ride are colliding at a rate of:

w) 1-10 millimeters per year  
x) 1-10 centimeters per year
y) 1-10 meters per year
z) 1-10 decimeters per year

ANSWER: X -- 1-10 CENTIMETERS PER YEAR

59. Multiple Choice: In which of these states can large numbers of drumlins be found?
w) Oregon
x) California
y) Texas
z) Wisconsin

ANSWER: Z -- WISCONSIN

60. Multiple Choice: Which one of these glacial features is believed to have formed in the bed of a subglacial stream?
w) an esker
x) a kame
y) a drumlin
z) a moraine

ANSWER: W -- AN ESKER

61. Multiple Choice: In which of the following is a continental glacier found?
w) Switzerland
x) the Rockies
y) Greenland
z) the Andes Mountains

ANSWER: Y -- GREENLAND
62. Multiple Choice: Deposits that form when the ice in a glacier melts are called:

w) drifts  
x) dunes  
y) veins  
z) cirques (pron: serks)  

ANSWER: W – DRIFTS

63. Multiple Choice: The earth’s climate has been warming since the last glacial period which ended about how many years ago?

w) 1,000 to 2,000 years ago  
x) 10,000 to 20,000 years ago  
y) 100,000 to 200,000 years ago  
z) 1,000,000 to 2,000,000 years ago  

ANSWER: X -- 10,000 TO 20,000 YEARS AGO

64. Multiple Choice: Cirrus clouds are:

w) rain clouds  
x) thick and fleecy  
y) made of ice crystals  
z) low cloud layers  

ANSWER: Y -- MADE OF ICE CRYSTALS

65. Multiple Choice: The name of a rapid rise of coastal water that accompanies the arrival of a cyclone is called:

w) hurricane  
x) storm surge  
y) tidal wave  
z) cyclonistat  

ANSWER: X -- STORM SURGE

66. Multiple Choice: Certain substances are classified as water pollutants, others as air pollutants and still others as land pollutants. Which of the following pollutes all three parts of our environment?

w) fluorocarbons  
x) smog  
y) acid rain  
z) ozone  

ANSWER: Y -- ACID RAIN

67. Short Answer: What is the name of the phenomenon that causes an accumulation of heat in the lower atmosphere because of the absorption of long-wave radiation from the Earth’s surface?

ANSWER: GREENHOUSE EFFECT

68. Multiple Choice: Which is true for Low-Latitude Climates?

w) have a winter season  
x) lack a winter season  
y) are wet throughout the year  
z) are dry throughout the year
ANSWER: X -- LACK A WINTER SEASON

69. Multiple Choice: The Greenhouse Effect is caused primarily by which of the following processes?

w) blocking incoming short wave solar energy
x) absorbing incoming short wave solar energy
y) heating of the Earth's stratosphere
z) absorbing outgoing long wave radiation from the Earth

ANSWER: Z -- ABSORBING OUTGOING LONG WAVE RADIATION FROM THE EARTH

70. Multiple Choice: Fluorite is what number on Moh's hardness scale?

w) 1
x) 2
y) 3
z) 4

ANSWER: Z -- 4

71. Multiple Choice: Apatite is what number on Moh's (pron: moes: rhyme with toes) hardness scale?

w) 1
x) 3
y) 5
z) 7

ANSWER: Y – 5
72. Multiple Choice: Hematite is a primary ore of which of the following metals?

w) zinc  
x) tungsten  
y) iron  
z) none of the above

ANSWER: Y -- IRON

73. Multiple Choice: Galena is a primary ore of which of the following metals?

w) zinc  
x) tungsten  
y) lead  
z) silver

ANSWER: Y -- LEAD

74. Multiple Choice: Sphalerite is a primary ore of which of the following metals?

w) zinc  
x) tin  
y) copper  
z) iron

ANSWER: W -- ZINC

75. Multiple Choice: Which of the following minerals is a source of copper?

w) Bauxite (pron: box-ite)  
x) Hematite  
y) Malachite  
z) Galena

ANSWER: Y -- MALACHITE

76. Multiple Choice: Which physical phenomenon or principle is most often applied in the search for petroleum reservoirs?

w) gravitational attraction  
x) magnetic field distortions  
y) natural radioactive decay of minerals  
z) acoustic wave transmission and reflection

ANSWER: Z -- ACOUSTIC WAVE TRANSMISSION AND REFLECTION
77. Multiple Choice: Which of the following time periods describes the age of the coal deposits of the Eastern United States?

w) Jurassic and Cambrian
x) Mississippian and Pennsylvanian
y) Pliocene and Miocene
z) none of these

ANSWER: X -- MISSISSIPPIAN AND PENNSYLVANIAN

78. Multiple Choice: Of the following four geologic periods, which is the oldest?

w) Devonian
x) Silurian
y) Permian
z) Jurassic

ANSWER: X -- SILURIAN

79. Multiple Choice: Of the following four geologic periods, which is the most recent?

w) Devonian
x) Silurian
y) Permian
z) Jurassic

ANSWER: Z -- JURASSIC

80. Multiple Choice: On the Phanerozoic (pron: fan-eh-reh-zO-ik) Time Scale, which of the following geologic periods occurred approximately 225 to 280 million years ago? Is it:

w) Jurassic
x) Permian
y) Carboniferous
z) Silurian

ANSWER: X – PERMIAN

81. Multiple Choice: On the Phanerozoic (pron: fan-eh-row-zo-ick) Time Scale, which of the following geologic periods occurred approximately 395 to 430 million years ago? Is it:

w) Jurassic (pron: ju-ras-ick)
x) Permian
y) Carboniferous
z) Silurian

ANSWER: Z -- SILURIAN

82. Multiple Choice: On the Phanerozoic (pron: fan-eh-reh-zO-ik) time scale, which of the following geologic periods occurred approximately 500 to 570 million years ago? Is it:

w) Cambrian
x) Ordovician (pron: ord-eh-vish-en)
y) Carboniferous
z) Silurian

ANSWER: W -- CAMBRIAN

83. Multiple Choice: The Miocene, Eocene and Paleocene epoches belong to what geologic period on the Phanerozoic Time Scale? Is it the:
w) Devonian
x) Permian
y) Triassic (pron: try-as-ick)
z) Tertiary

ANSWER: Z -- TERTIARY

84. Multiple Choice: During which period, in the earth's history, did MOST dinosaurs become extinct?

w) Carboniferous
x) Cretaceous
y) Quaternary
z) Triassic

ANSWER: X -- CRETACEOUS

85. Multiple Choice: The disappearance of the dinosaurs also marks the end of which geological era?

w) Precambrian
x) Cambrian
y) Mesozoic (pron: mez-ah-zi-k)
z) Cenozoic (pron: see-nah-zo-ik)

ANSWER: Y -- MESOZOIC

86. Multiple Choice: On a topographic map, lines that indicate water depth are termed:

w) isogonic lines (pron: eye-seh-gone-ik)
x) bathymetric lines (pron: bath-i-meh-trik)
y) isopachs
z) none of these

ANSWER: X -- BATHYMETRIC LINES

87. Multiple Choice: In geological studies, a fault in the earth's surface in which the hanging wall has moved UP relative to the footwall is termed:

w) overthrust fault
x) reverse fault
y) tear fault
z) none of these

ANSWER: X -- REVERSE FAULT

88. Multiple Choice: In geological studies, a fault in the earth's surface along which primarily horizontal movement has taken place is termed:

w) overthrust fault
x) strike-slip fault
y) reverse fault
z) none of the above

ANSWER: X -- STRIKE-SLIP FAULT

89. Multiple Choice: In studies of the surface of the earth, a reverse fault having a dip between 10 and 45 degrees is known as a:

w) thrust fault
x) normal fault
y) strike-slip fault
90. Short Answer: What is the name given to a flat-topped plateau bordered on all sides by cliffs?

ANSWER: MESA or BUTTE

91. Multiple Choice: You are adrift off the coast of Miami, Florida in the Gulf Stream. Where would you most likely land?

w) Argentina  
x) Louisiana  
y) New York  
z) The British Isles

ANSWER: Z -- THE BRITISH ISLES

92. Short Answer: A troughlike downfold of strata is called a:

ANSWER: SYNCLINE

93. Multiple Choice: The horse latitude which occurs at approximately 30\(^\circ\) - 35\(^\circ\) north is also known as the:

w) doldrums  
x) calms of Cancer  
y) calms of Capricorn  
z) trough of the Pacific

ANSWER: X -- CALMS OF CANCER

94. Short Answer: Of the three types of corals, Scleractinian, Rugose and Tabulate, which one is still in existence today?

ANSWER: SCLERACTINIAN

95. Multiple Choice: A circular cavity ground out of bedrock by running water is called a:

w) cave  
x) pothole  
y) sinkhole  
z) kettle hole

ANSWER: X -- POTHOLE

96. Multiple Choice: A yazoo stream flows through which of the following?

w) gorge  
x) divide  
y) backswamp  
z) water gap

ANSWER: Y -- BACKSWAMP

97. Multiple Choice: Which of the following is a famous hanging trough waterfall?

w) Yellowstone Falls  
x) Yosemite Falls  
y) Niagara Falls  
z) Victoria Falls
ANSWER: X -- YOSEMITE FALLS
98. Multiple Choice: A wave with a wavelength of 40 meters and a height of 2 meters will NOT be refracted in water with a depth of more than:

w) 1 meter  
x) 2 meters  
y) 10 meters  
z) 20 meters

ANSWER: Z -- 20 METERS

99. Multiple Choice: The lag time between precipitation period and peak discharge period of a river:

w) is increased by urbanization  
x) is decreased by urbanization  
y) is shorter for a large drainage basin than for a small one  
z) depends upon the hydraulic heads

ANSWER: X -- IS DECREASED BY URBANIZATION

100. Short Answer: Give the general term used to designate the sand, silt, and mud deposited by a stream, along its bank or upon its floodplain, during periods of high water.

ANSWER: ALLUVIUM or ALLUVIAL