Earth Sciences Final Review – for up to 4% BONUS

Answer in full sentences, handwritten, **NOT typed**, on a separate sheet of paper. More details = better!

Astronomy

1. What are the seven types of telescopes? What are the two types of optical telescopes?
2. What is a spectroscope? What is it used for? Explain how.
3. Describe ways to measure the distance to a star?
4. Define: astronomical unit, light year.
5. Define: apparent magnitude, absolute magnitude, luminosity.
6. What is the Doppler effect? What does it tell us about a star?
7. Draw the Hertzsprung-Russel (H-R) diagram. Label all parts. Where is our sun?
8. Describe the life cycles of high, medium and low mass stars.
9. How did our solar system form?
10. Describe the Big Bang theory of the origin of the universe.
11. Describe: photosphere, chromosphere, corona, prominences, sunspots, flares, solar wind.
12. What are the general features of each of the following: inner planets, outer planets, asteroids, satellites (moons)?
13. How do we know that the Earth rotates on its axis? And that it revolves around the Sun?
14. Why do we have seasons?
15. Explain why we have phases of the moon.
16. How is the moon related to the tides?

Atmosphere

17. Draw a detailed diagram of the layers of the atmosphere. Label it well.
18. How are volume, density, pressure and temperature interrelated in the atmosphere? How do they each relate to low and high pressure regions?
19. Explain the greenhouse effect. What are the 3 major greenhouse gases?
20. On a non-rotating, land-free earth, what would the wind patterns look like?
21. What causes the Coriolis Effect? What does it cause?
22. What are the differences between tornados and hurricanes?
23. Draw the hydrologic cycle.
24. Describe: rain, hail, snow, sleet, dew, frost. Also explain how they form.
25. What are the main air masses and what type of weather is associated with them?
26. What is a front? Draw cross-sections of cold and warm fronts.
27. What is atmospheric pressure commonly measured with?
28. What are the 3 main cloud types? Describe them. What does “nimbo” refer to?

Oceans

29. What is albedo?
30. What is a gyre?
31. What is salinity?
32. What is thermohaline circulation? What causes it?
33. What is El Niño and La Niña? When do they occur?
34. Draw a labelled diagram of the ocean floor.
35. How might global warming affect ocean currents?
36. What is the thermocline?

Rocks and Minerals

37. What are the two main elements in the earth's crust in order of abundance?
38. What is the difference between rocks and minerals?
39. How do we define a mineral?
40. What properties and simple tests are used to identify minerals?

41. What are some ways you can tell igneous, sedimentary, and metamorphic rocks apart?
42. How do the three rock types each form?
43. Draw and explain the rock cycle.
44. What is the relationship between an igneous rocks crystal size, cooling rate and where it formed.
45. Make a list of rocks for each rock type.

Resources

46. What are some of the minerals that are mined in BC? Where and why?
47. How is coal formed? How is oil formed?
48. What are five methods of mining?
49. How is coal used? How is zinc used?
50. What environmental problems are associated with mining?
51. How can we conserve resources?

Tectonics, Volcanism and Earthquakes

52. Where are most volcanoes and earthquakes located?
53. What are several pieces of evidence that the plates are and have been moving?
54. Draw a labeled diagram of the Earth's layers.
55. Define diverging, converging and sliding boundaries.
56. How is folding and faulting related to mountains?
57. What are the types of faults and folds? Draw them.
58. What is the difference between magma and lava?
59. What type of eruption and volcano type does each of the following produce: rift eruption? hotspot eruption? subduction boundary eruption?
60. What do each of the following look like: cinder cone, composite volcano, shield volcano, basalt plateau?
61. Define dike, sill, batholith, stock, neck and laccolith.
62. Describe geysers, fumaroles, and hot springs.
63. Explain the elastic rebound theory.
64. Draw the P, S, and L wave chart.
65. Explain how to locate the epicentre of an earthquake. (seismogram, graph, circles)
66. Explain how a seismograph works.
67. What is the difference between magnitude and intensity? What scales are used?
68. How do scientists attempt to predict a) volcano eruptions b) earthquakes.
69. Describe BC in terms of the different plate tectonic/volcanic/earthquake situations.

Weathering and Erosion

70. Draw a labelled diagram of a soil profile.
71. What are the four components that soil is made from?
72. What type of weathering process is favored in a warm moist climate?
73. Define the different types of mechanical, chemical, and biological weathering
74. What is carbonic acid?
75. What are some of the major rivers in the world and wear are the located?
76. How does running water break up bedrock?
77. Describe how a meander forms.
78. Where in a river does the greatest loss of speed (and the most sediment deposition) occur?
79. What is a watershed (aka drainage basin)?
80. What is an alpine glacier? What shape of valley do they form?
81. What is the driving force of glacial movement?
82. Describe and draw diagrams of erosional and depositional features of glaciers.
83. What determines how large a wave will be?
84. How does dune migration happen?
85. What are some human activities that can accelerate weathering and erosion?