Study Guide for Earth Science Final 11-12

SCIENTIFIC METHOD

1. What are the steps involved in the scientific method?

2. What is a control?

3. What is the difference between an independent and dependent variable?

4. What is a hypothesis?

MAPPING

5. What is the problem with all maps? Explain why?

6. What is a contour map and what does it show?

7. What is the Prime Meridian? What is the International Date Line? What is the Equator?

8. Describe Latitude and Longitude.

9. What does a scale of 1:24,000 mean?
    a. A straight hiking trail drops 1000 feet in elevation from beginning to end. The trail is 2 miles long. What is the gradient? Be sure to write the formula, work, and answer with proper units!

GEOLOGIC TIME

10. Define the relative age dating principles of:
    a. Superposition:

    b. Cross-cutting relationships:

    c. Original horizontality:

11. *Be able to determine relative age by rock layers by using the above principles.*
12. What does the principle of uniformitarianism state?

13. What is one half-life of a radioactive substance?

14. If you find a fossil in your backyard, what type of rock are you looking at?

15. From what material do these rocks (the fossil rocks) form?

16. How old is the Earth?

17. Put the following in order from longest to shortest: ERA, EON, EPOCH, PERIOD

18. What do the following geological eras mean? (Cenozoic, Mesozoic, and Paleozoic)

FRESHWATER

19. In what zone is groundwater located? What is the top of this zone called? What is the zone of aeration?

20. *Be able to determine whether a well would be able to get water by looking at a diagram*.

21. What are some sources of groundwater pollution?

22. What is the difference between point and non-point source pollution? examples?

23. List some characteristics of a stream that could contribute to higher erosion rates and material transport.

ATMOSPHERE & WEATHER

24. What are the 4 layers of the atmosphere?

25. Where is the Ozone Layer? What does it do?

26. What is the Coriolis Effect? In what direction does it affect fluids in the northern hemisphere? How does a pressure gradient affect winds?

27. What are the origins for winds?

28. What is the difference between radiation, conduction, and convection?

29. Define sublimation, deposition, evaporation, and condensation.

30. Warm air can hold _____ water vapor than cold air.
31. What is a jet stream?
32. Compare and Contrast High and Low Pressure systems.

33. How does a tornado form? How does it die?

34. How does a hurricane form? How does it die?

35. How does the leeward side of a mountain differ from the windward side?

36. What is the relationship between elevation and climate?

37. List the characteristics of the 4 different air masses. (cP, mP, cT, mT)

38. What is the term for the boundary where two air masses meet?

39. Draw the diagrams for the 4 types of fronts, showing how the air masses move & the resulting precipitation.

40. What is the ultimate energy source that creates wind and waves?
41. What instrument measures…
    a. wind speed:
    b. atmospheric pressure:
    c. humidity:

42. Be able to interpret a weather map.
43. What are isobars? How can you tell where the wind speeds will be the highest?

GLOBAL WARMING & SUSTAINABLE DEVELOPMENT

44. What is global warming? What trend does it try to explain?

45. What is the greenhouse effect?

46. What are greenhouse gases? Why are they important?

47. List some things that humans can do to keep our society sustainable.

ASTRONOMY

48. What is difference between the geocentric and heliocentric model of the universe?

49. What is retrograde motion?

50. Describe contributions to astronomy of the following astronomers:
    a. Ptolemy
    b. Galileo
    c. Copernicus
    d. Kepler
    e. Brahe
    f. Newton

51. What is the shape of the planets orbits?

52. What are the different forms of electromagnetic radiation?

53. What is the function of a prism?

54. What information can a star's spectrum provide?

55. How are space telescopes different from Earth-based telescopes?

56. What are the two different types of optical telescopes? How are they different?

57. What is the Doppler Effect? And what can it tell astronomers?

58. *Know how to interpret an HR diagram*. What are the 3 regions of the diagram, and where are they located?

59. As a star's brightness increases on the diagram, what happens to its magnitude? (Does the number become larger or more negative?)

60. What are the different layers of the sun?

61. What is the composition of the sun?

62. What are the characteristics of sunspots?

63. What is the source of the sun's energy?

64. Describe the relationship of color and temperature of stars.

65. What do light-years measure?

66. What characteristic of a star does magnitude describe?

67. Describe the difference between absolute and apparent magnitude.

68. Describe the Nebular Theory.

69. Describe the stellar evolution of stars.

70. What force is needed to form a star?

71. What happens when a star dies?

72. Describe black hole characteristics.

73. Provide evidence for an expanding universe.

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74. What is the “Big Bang” theory? What does it try to explain? What are two pieces of evidence for it?