

**VA Science Olympiad Regional Tournament 2009  
Meteorology Test**

**1. The rainfall rate this hour is part of the \_\_\_\_\_ for today. It is part of the \_\_\_\_\_ for tomorrow.**

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| <b>A.</b> forecast, thermal record | <b>C.</b> weather, climate record |
| <b>B.</b> weather, observation     | <b>D.</b> baroclinicity, forecast |

**For questions 2 through 7, indicate whether the following are Weather (W) or Climate (C).**

2. The current temperature in Sioux Falls is 24 degrees. \_\_\_\_\_
3. The pressure in Minneapolis is falling this hour. \_\_\_\_\_
4. The average temperature today in Juneau is 10 degrees. \_\_\_\_\_
5. Rainfall this month is well above normal. \_\_\_\_\_
6. Winds are out of the North at 10 mph. \_\_\_\_\_
7. The surface pressure is 1011 mb. \_\_\_\_\_

**8. Using the three cell model, complete the following sentence:**

Air in \_\_\_\_\_ Cells becomes very dense due to extremely cold temperatures. This results in sinking motions indicative of \_\_\_\_\_ pressure.

- |                       |                           |
|-----------------------|---------------------------|
| <b>A.</b> Hadley, low | <b>C.</b> Ferrell, high   |
| <b>B.</b> Polar, high | <b>D.</b> Meridional, low |

**9. At the surface, \_\_\_\_\_ Cells form the southwesterly prevailing westerlies.**

- |                      |                  |
|----------------------|------------------|
| <b>A.</b> Meridional | <b>C.</b> Hadley |
| <b>B.</b> Ferrel     | <b>D.</b> Polar  |

**10. Ferrel and Hadley Cells meet at the \_\_\_\_\_.**

- |  |                              |
|--|------------------------------|
| <b>A.</b> Doldrums                       | <b>C.</b> Horse latitudes    |
| <b>B.</b> Intertropical Convergence Zone | <b>D.</b> Meridional Equinox |

**11. Which of the following is not a change identified by Milankovitch:**

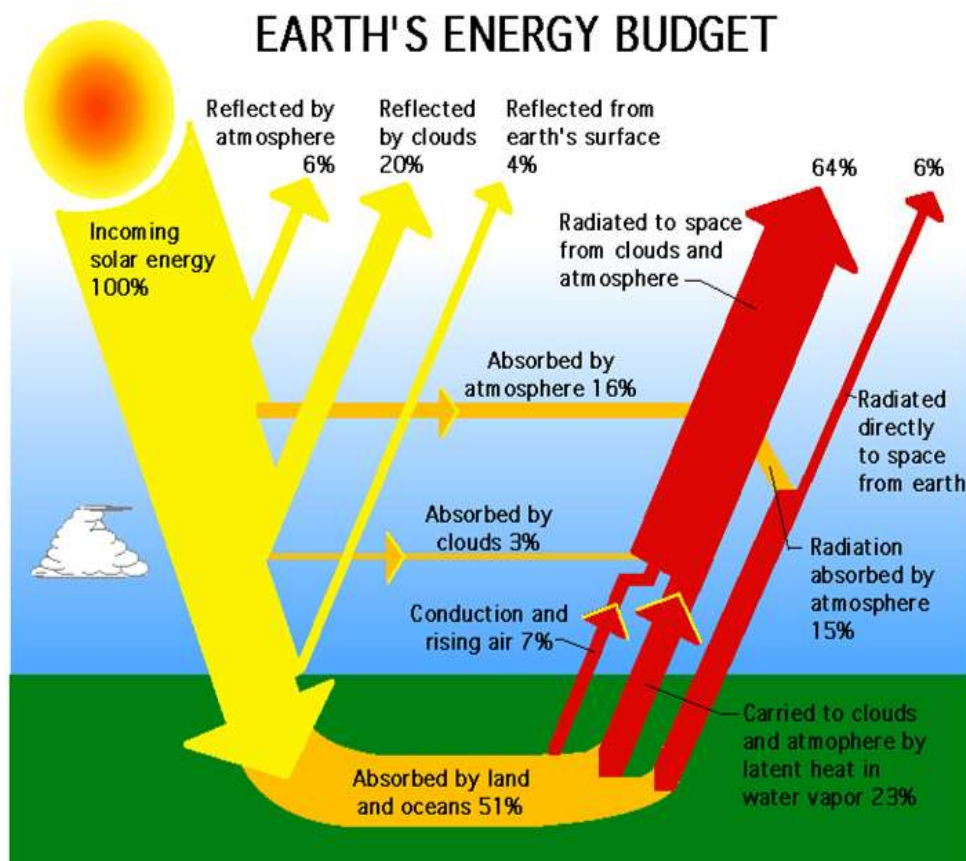
- A.** Orbital eccentricity
- B.** Precession
- C.** Polarity
- D.** Axial tilt

12. \_\_\_\_\_ at end of the last ice age \_\_\_\_\_ the saltiness of sea water, preventing it from sinking, therefore \_\_\_\_\_ deep water circulation.

- A. Warming, reduced, decreasing
- B. Warming, reduced, increasing
- C. Cooling, reduced, decreasing
- D. Cooling, reduced, increasing

13. Which of the following can be used to discover or infer ancient climates of Earth?

- A. The fossil record – gives us an idea of the climate by knowing plant and animal assemblages
- B. Ocean sediments – gives us climatic information over hundreds of thousands of years by study of O16/O18 ratios in foraminifera
- C. Ice cores – over tens of thousands of years
- D. A and C
- E. A, B, and C



14. Which has the greater impact on temperature on a given day, cloud cover or albedo?

**15. During solar maximum (high level of sunspots), activity on the sun results in \_\_\_\_\_ radiation coming to earth which may result in \_\_\_\_\_ temperatures.**

- A. Increased, warmer
- B. Decreased, warmer
- C. Increased, cooler
- D. Decreased, cooler

**#16-22. Look at the atmospheric phenomena below:**

If an event is usually associated with El Nino, write an **A** next to the item.

If an event is usually associated with La Nina, write a **B** next to the item.

- 16. \_\_\_\_\_ Strong equatorial counter-current
- 17. \_\_\_\_\_ Higher sea levels in the western Pacific
- 18. \_\_\_\_\_ Stronger than normal subtropical highs in the Pacific
- 19. \_\_\_\_\_ Wetter than average winter over Florida
- 20. \_\_\_\_\_ Increased snowfall in the Northwestern US
- 21. \_\_\_\_\_ More hurricane activity
- 22. \_\_\_\_\_ Strong Peruvian current

**23. Which reason is NOT likely to have caused the Norse settlements in Greenland to die out during the Little Ice Age?**

- A. Increasing ice made trade outside of Greenland almost impossible
- B. Famine occurred, because permafrost made growing crops difficult
- C. Rising sea levels made settlements unlivable
- D. Competition over resources with the Inuit people led to hostility.

**#24-30 The travel agency where you work has four new locations. The boss knows you studied climate so she gives you the names of the locations and their Koppen classification:**

- A. Luanda, Angola: Aw
- B. Alice Springs, Australia: BWh
- C. Stanley, Falkland Islands: Cfb
- D. Yellowknife, Canada: Dfc

**Give one location which best fits each description:**

- 24. \_\_\_\_\_ Almost always dry. Very little rain here.
- 25. \_\_\_\_\_ The temperatures average below  $-3^{\circ}\text{C}$  in the winter.
- 26. \_\_\_\_\_ The winter is dry, but the summer is very wet.
- 27. \_\_\_\_\_ The average monthly temperatures don't get above  $22^{\circ}\text{C}$ , but they don't drop below  $-3^{\circ}\text{C}$  either.
- 28. \_\_\_\_\_ Every month is above  $18^{\circ}\text{C}$  on average.
- 29. \_\_\_\_\_ This location is most influenced by a marine climate, but not the ITCZ.
- 30. \_\_\_\_\_ This location is most influenced by the ITCZ, but it is also near the coast.